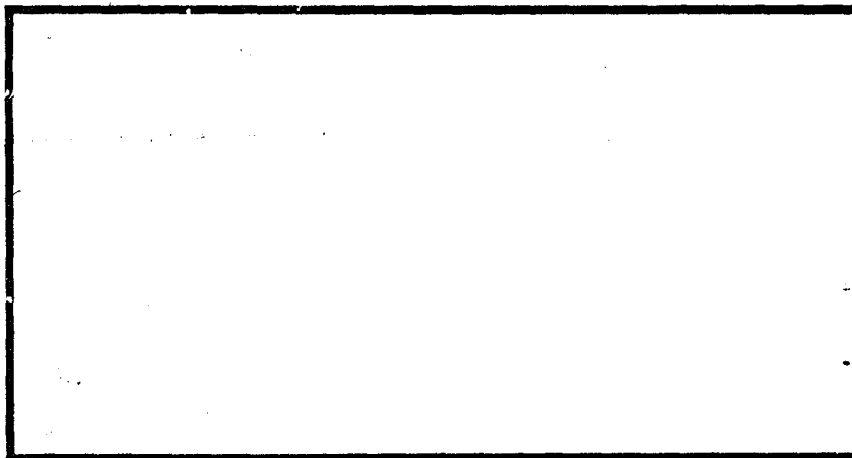


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AFIT/GCM/DEM/91S-3

A CONTRACT MANAGEMENT GUIDE
FOR AIR FORCE
ENVIRONMENTAL RESTORATION

THESIS

Grant S. Bowers, Captain, USAF

AFIT/GCM/DEM/91S-3

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AFIT/GCM/DEM/91S-3

**A CONTRACT MANAGEMENT GUIDE
FOR AIR FORCE
ENVIRONMENTAL RESTORATION**

THESIS

**Presented to the Faculty of the
School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Contract Management**

**Grant S. Bowers, B.S.Min.E.
Captain, USAF**

September 1991

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Preface

Many papers and articles are written on Air Force environmental restoration efforts, which are conducted under the aegis of the Installation Restoration Program (IRP). Most address broad questions such as: "How can the Air Force afford to clean up all our toxic waste while the budget is shrinking?" and "How clean is clean enough?" This thesis does not address these strategic issues. Rather, it attempts to help Air Force contracting officers address specific issues they can confront from day to day, like: "What types of contracts are other bases using?" and "Is there any pricing guidance for remediation contracts?"

Many people assisted me in this research, and I'd like to thank at least a few of them. Special thanks go to Professor Doug Osgood, my thesis advisor, for his unswerving faith and support. Next, for their immeasurable moral support I extend my eternal gratitude to my mother, Jean (mother of eight!) and my father, Sherb Bowers, a true craftsman and one of the real heroes of World War II. In addition, I'd like to thank all the people who have been so enthusiastic about helping me do a little bit to clean up our environment, my beautiful daughters Sara and Amy for making the time at AFIT fun, and to the person who truly made it all possible, my loving wife, Patty.

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Abstract

△ This study was conducted to examine the extent to which written guidance was available to Air Force contracting officers involved in environmental restoration projects. The study examines literature from sources inside and outside the Air Force, classifies it by source, and extracts guidance from the subject matter.

The study indicates that written guidance exists, but is fragmented. As a result, contracting officers lack concise guidance on the special considerations in contracting for environmental restoration.

Guidance from the literature is summarized and presented in a stand-alone guide appended to the report. The guide is targeted toward new and mid-level contracting officers and recommends specific contract management techniques for environmental restoration.

In addition, the thesis recommends further study and suggests changes to the contracting guidance in the Federal Acquisition Regulation. A

A CONTRACT MANAGEMENT GUIDE
FOR AIR FORCE
ENVIRONMENTAL RESTORATION

I. Introduction

General Issue. The Air Force Installation Restoration Program (IRP) is the Air Force component of the Department of Defense effort to identify, investigate, and clean up past disposal sites (59:B-3). The program is of ambitious scope, but it is only in its infancy. The current projection of IRP funding, Figure 1, helps to illustrate that program effort is increasing at a phenomenal rate. The Air Force has now completed surveys of all installations (250 total; 101 Major installations). There were 3,620 potential hazardous waste sites identified, including such things as old landfills, fuel storage sites, fuel spills, fire training areas, sludge and waste lagoons, and solvent disposal sites. It is estimated that about 2,000 will require some form of cleanup (59:A-2).

The Air Force spent over \$760 million through Fiscal Year 1989 and finished (reached the NFA stage — see Figure 3) only 129 (of 3,620) sites (59:A-4). However, the Air Force does not intend to let this slow progress continue. In fact, the stated goal of the IRP is to complete the entire cleanup before the year 2000 (1:B-14).

USAF DERA REQTS & FUNDING FY 84 - FY 95

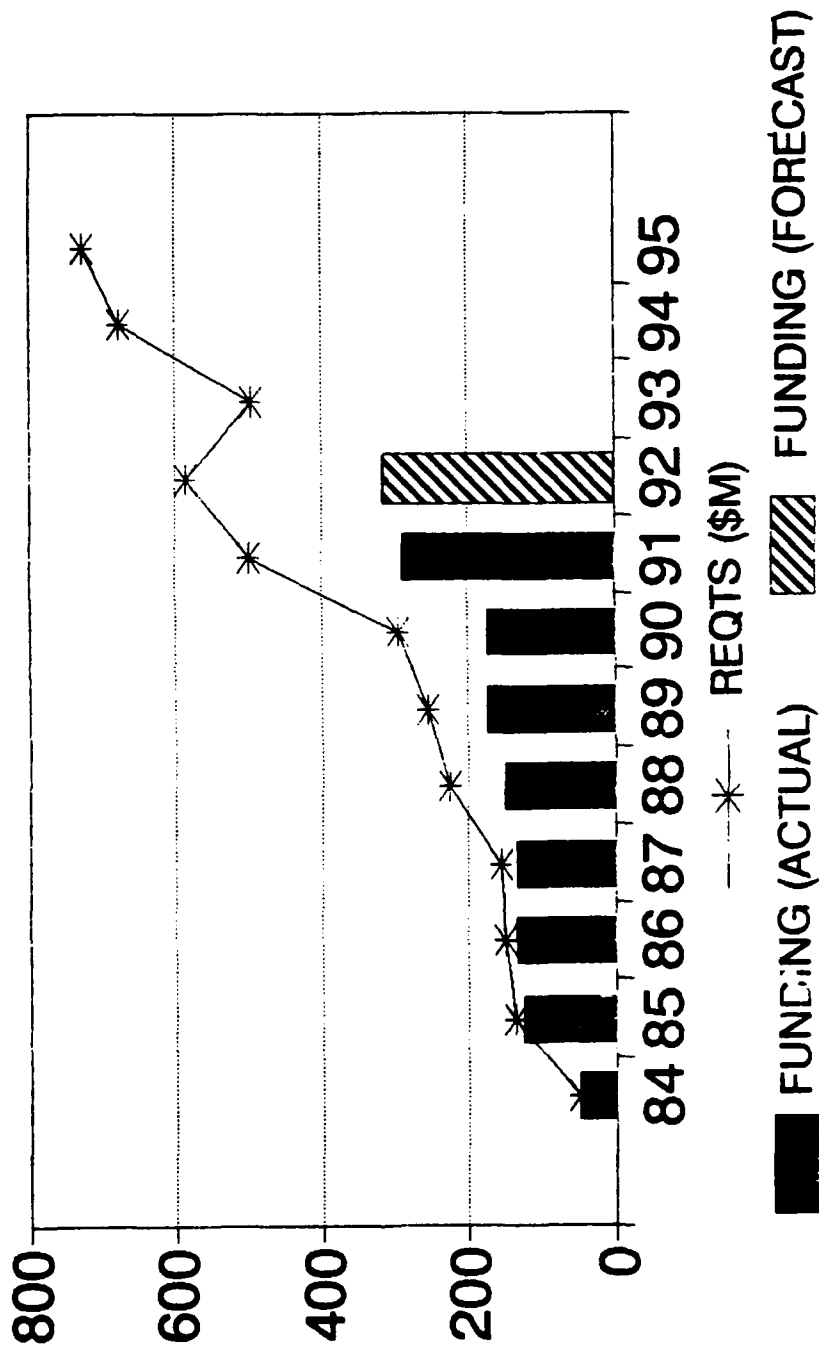


Figure 1. IRP Funding

With the emergence of such an aggressive and comprehensive environmental cleanup program, operational contracting organizations are finding they have little management guidance, at least as compared to that available for acquiring weapons systems, base services, or building construction, and so some are struggling to fashion new contracting techniques (40). The contract management procedures they have available were largely designed for procuring standard building construction and the associated Architecture-Engineering (A-E) effort. Environmental restoration contracting has some special considerations that are not easily treated with these procedures. One consideration is that most environmental remediation projects are far more technically complex than standard building construction. Hazardous waste cleanup projects often require special study efforts and the development of new technologies, there are special worker safety requirements, and the scope of work can change radically during contract performance. In addition, emergency cleanups or temporary measures ("interim remedial action") are often required during the initial study phase or during design (40).

Another special consideration is that the new comprehensive environmental legislation created new risks for contractors. For example, the Superfund law sets a legal standard of "strict joint and several liability" for environmental damage (35:1). This standard has resulted in

government contractors being liable for cleanup costs, penalties, and fines when further cleanup is needed on hazardous wastes that they thought were adequately disposed of (50:46). Firms can be held liable even if they acted in accordance with detailed guidance from the contracting officer or subcontracted in good faith for proper disposal. In fact, even their lenders can be held liable (8:7).

Problem Statement. The operational contracting community lacks adequate written guidance to the problems that are unique to contracting for environmental remediation.

Research Hypothesis. The hypothesis that was tested to attempt to confirm the problem statement was: Adequate guidance exists, but it is spread throughout the existing literature and the knowledge base of the participants.

Investigative Questions. There were four investigative questions researched to confirm the hypothesis:

1. Are there problems peculiar to IRP contracting?
2. Does guidance exist which addresses these problems?
3. If guidance exists, is it in the form of a comprehensive guide?
4. If such a guide existed, would operations contracting organizations use it?

Research Objectives. This research had two objectives:

(1) Ensure the existence of concise guidance for beginning to mid-level operational contracting officers and others involved in environmental restoration contracting.

(2) Contribute to the National Contract Management Association Body of Knowledge in the areas of Architecture-Engineering, construction, services, and R&D contracting.

Scope and Limitations. This study investigates the sources of guidance available to contracting officers involved in the Air Force IRP program. The research examined published and unpublished literature that describes the degree of success of present Air Force contracting efforts and related literature which discusses ideas that have potential for improving the IRP contracting process. The materials reviewed included textbooks, periodicals, instructional materials, military and corporate briefings, and government publications including statutory law, case law, regulations, and existing guides.

The subject of the research was limited to contracting done by or for the Air Force and to contracts for environmental restoration. By narrowing its focus to the environmental restoration process, no attempt has been made to address programs that seek to minimize the generation of hazardous waste, which are often called Resource Conservation and Recovery Act (RCRA) programs. These programs were mandated by separate legislation and are

implemented largely through separate regulations (61:58). This research may have applications on contracts for other efforts and in other organizations, but no attempt was made to address those applications specifically.

The guide addresses all major aspects of contracting which support the USAF IRP program. To do so required writing it in the form of an overview. A conscious attempt was made to minimize the duplication of existing guides for contracting officers, which are examined briefly in the literature review.

Background. This study found no previous authors who dealt specifically with the adequacy of guidance literature for USAF environmental remediation. On the other hand, there have been studies of the defense contract management literature base as a whole. In one of these, an AFIT thesis, M. L. Farquhar noted that authors characterize the literature base as "scarce" and "segmented" (36:18-19). As Farquhar put it, "some effort has been made to analyze isolated subject areas" (36:18).

It seems that authors have tended to concentrate on particular topical areas, evaluating the quality of the literature in their area of interest in an attempt to locate a market niche. These topical studies often take the form of guides to specific areas of the contract management field. For example, commercial guides have been published on contract law (82) and post-award management (68), and

researchers have supplemented these with guides on R&D contracting (66), and international contracting (4). In Farquhar's words, each of these authors studied an "isolated subject area" (36:18) of contract management.

Farquhar's study recommended that "further studies should be pursued . . . to analyze [other] publications so that a more thorough and all-encompassing analysis is achieved" (36:107). To support that recommendation, this study continued the process of technical specialization in literature reviews. This study reviews the "isolated subject area" (36:18) of environmental remediation contracting as one step toward developing a comprehensive contract management literature base.

11. Research Design

Design Approach. This research project was structured to follow what a recent text on research methods calls the "classical research procedure, [which] includes these steps:

1. Exploration . . .
2. Data Collection . . .
3. Analysis and interpretation of results" (33:58).

First, exploration was done through informal interviews. Then data was collected through a review of the current literature and further informal interviews. The literature and the interview results were analyzed by classifying the findings in terms of their sources and their relevance to the tasks involved in operating a contracting organization.

The same research methods text quoted above helps describe the research design in other ways. Emory notes that "Research design . . . may be viewed from at least seven different perspectives" (33:59). These are:

1. Degree of problem crystallization . . .
2. The method of data collection . . .
3. Researcher control of variables . . .
4. The purpose of the study . . .
5. The time dimension . . .
6. The topical scope . . .
7. The research environment. (33:59-61)

The following paragraphs are an analysis of this study in terms of Emory's seven perspectives:

1. This is an exploratory study, "loosely structured with an objective of learning what the major research tasks are to be" (33:59), rather than a "formal study which begins where exploration leaves off" (33:60) with "precise

procedures and data source specifications" (33:59). The study was designed to explore the rather uncharted territory of environmental remediation contracting to determine where further research is needed.

2. The data collection methods include both the "observational" and "survey" or "ex post facto design" methods (33:60). Purely observational data is collected on the amount of literature available on the subject. The literature is also surveyed for content to collect guidance for inclusion in the guide.

3. This study intended to minimize researcher control of the variables. In terms of researcher control, this is an ex post facto design, because the researcher intended to "[have] no control over the design in the sense of being able to manipulate" the variables (33:60). In Emory's words, this study is only an attempt to "report what has happened or what is happening. In fact, it is important in this design that the researchers not influence the variables; to do so is to introduce bias" (33:60). To do so would reduce the value of the guidance.

4. The purpose of the study is descriptive rather than causal. The study is not concerned with "learning how one variable affects another" (33:60). For example, there is no statistical study of correlation between contract type and cost performance. Rather, the goal of the study is to describe how the current players perceive the game.

5. This is a cross-sectional rather than a longitudinal study. It is a study of what conditions exist in the field in September, 1991.

6. The topical scope of the study approaches the case design end of the spectrum rather than the pure statistical study model. The study emphasized detailed analysis of the interrelationships between organizations rather than trying to gather statistical data to determine the exact frequency with which contracting officers seek what may be a nonexistent guide to the IRP.

7. The research environment consists of the actual field conditions.

Exploration Phase. The first portion of the research was an exploration of two areas of the author's interests, contract management and the earth sciences, including geology, minerals engineering, and environmental management. These areas were explored through what Emory calls an "experience survey," where we "seek . . . information from persons experienced in the field of study" to get "their ideas on which are the important issues or aspects of the subject" (33:63). Exploration was done through informal interviews at the AFIT School of Systems and Logistics and the AFIT School of Civil Engineering and Services. The focus of the exploratory interviews was to find a contract management area which corresponded to the author's areas of interests and which had management problems requiring research.

Data Collection Phase. This phase of the study consisted of a literature review and case studies.

Literature Review. Data consists of the source, subject and content of current literature and its collection was done through a literature search. The literature review began with on-line searches of the AFIT Library and Wright State University Library collections using their on-line (computerized) catalogs. Next, the Wright State University On-line Business Periodicals Index was used along with searches of the DTIC, NASA/RECON, and DLSIE databases through the AFIT Library and a manual search of the other AFIT Library indices and abstracts.

Case Studies. A series of case studies was conducted to help support the conclusions of the literature search and to supplement the guidance gleaned from the literature. The cases were designed to be a representative cross section of organizations involved in remediation contracting, through the two vertical chains of command (technical activity and contract management office) from Headquarters, United States Air Force ("Air Staff") to the operational organizations, which include the primary customers for the guide. The subjects of the case studies are listed in Table 1.

The case studies were conducted using informal personal and telephone interviews. The interview questions were tailored to the mission of the interviewee and designed with leading questions as a basis to "probe with additional questions, and gather supplemental information through

<u>CASE NUMBER</u>	<u>OFFICE SYMBOL</u>	<u>FUNCTION</u>
1	HQ USAF/CEEV	Air Staff - Technical
2	SAF/AQCO	Air Staff - Contracting
3	AFLC/CEVR	Command - Technical
4	AFLC/PKO	Command - Contracting
5	2750ABG/EM	Operational - Technical
6	WPCC/PMKE	Operational - Contracting

Table 1. Case Studies

observations" (33:160). See Appendix A for copies of the interview questionnaires. The interview questions were designed to gather factual information rather than attitudes or opinions, and serve as reporting mechanisms rather than "surveys," which are regulated by AFR 30-23 and defined as using "Questionnaires designed to obtain facts . . . and which also contain attitude and opinion questions" (27:2).

Paragraph 2.c.(1) of AFR 30-23 notes that AFR 178-7 applies to other information requests (27:2). AFR 178-7 has now been superseded by AFR 4-38, which notes that "The [regulation] applies to all . . . information requirements" (24:3) and contains the following definition:

Information requirement. A statement of need for information to carry out a specified and authorized function that requires the establishment or maintenance of forms or formats, or reporting or record keeping systems, whether manual or automated. (24:3)

The one-time case study informal interviews of this study are structured so as not to relay any requirement to

establish or maintain any forms, formats, reports, or record keeping systems.

Certain of the questions were specifically designed to gather data to answer the investigative questions. The questionnaires, in Appendix A, show each interview question marked with the number of the corresponding investigative question. Those remaining questions not marked or marked with "(none)" were designed to gather factual information usable as guidance.

Data Analysis Phase.

Data Preparation. A preliminary stage of data analysis was done for the purpose of organizing the findings. This preliminary analysis, or "data preparation" (33:319), consisted of classifying the literature sources to ease their review and collecting statistics (a simple count) on the answers to the interview questions. The methods used for these steps are explained in the following paragraphs.

Emory suggests a simple and logical way to classify literature: "label them either as internal (organization) or external sources of information" (33:137). Classification by source helps the reader associate the literature with the source to facilitate finding the reference for operational use or to facilitate further research.

During the literature review, it was found that the sources lend themselves well to an expansion of Emory's

classification scheme. They are first classified as internal or external, then sorted on a temporal basis.

First, the government sources are classified using Emory's scheme. Because this study focuses on Air Force contracting, those organizations in what can be loosely defined as the vertical chain of command of the Air Force are classified as internal sources. This includes the Executive Office of the President, which signs legislation into law and issues Executive Orders. Other internal sources are the organizations in the other branches of government that have the same effect (Congressional overrides of vetoes, administrative decisions of other agencies, and Judicial actions affect how legislation must be enforced). Literature from the Department of Defense and all Air Force operating organizations is also classified as internal. Literature from other organizations, whether inside or outside the federal government, is classified as external.

Within this internal/external classification, the sources are classified in a temporal fashion — that is, in the top-to-bottom fashion suggested by the flow of policy in the publishing or using organization. For example, HQ USAF sources are followed by Major Command (MAJCOM) sources, followed by operational sources. The idea is that ideally, legislation begins the process of establishing the requirements for government contracting, followed by the issuance of Executive branch policies, procedures,

regulations, and operating instructions. Federal implementation is generally followed up by state and local government implementation, followed by publication of experience data by the professional and trade associations in private industry.

Classifying Written Guidance. After this classification by source, the literature will be classified by content. The data (literature) will be analyzed by characterizing the guidance it contains in terms of the kinds of contracting tasks it addresses. These tasks are classified as suggested (and done) by Farquhar. The "general structure of the Federal Acquisition Regulation (FAR) was used to classify the literature" (36:35). The purpose of classifying sources by their correspondence to the tasks in the FAR is to ensure that the guidance is useful to contracting officers, who use the FAR as a primary operational guidance document (64). In addition to the contracting tasks described by the FAR, contracting officers must also perform tasks to manage the day-to-day operation of their organizations. To help with these other tasks, some of the data is classified as organizing, training, sources of further information, or reference materials.

In summary, the literature is first classified by source, then its content is categorized in accordance with the categories in Table 2, many of which correspond to FAR Subchapters. An outline of the contents of the FAR Subchapters is provided as Appendix B.

Analysis of Interviews. The guidance gleaned from interviews is classified for reporting in the data collection phase of the report in the same manner as the literature sources are classified. Guidance from interviews is classified in accordance with the categories in Table 2, then summarized in the Guide, Appendix D.

<u>CATEGORY NUMBER</u>	<u>TITLE</u>	<u>FAR SUBCHAPTER</u>
1	Introduction	-
2	Organizing	-
3	Education	-
4	Acquisition Planning	B
5	Contracting Methods and Types	C
6	Socioeconomic Programs	D
7	General Contracting Requirements	E
8	Special Categories of Contracting	F
9	Contract Management	G
10	Sources of Further Information	-

Table 2. Guidance Categories

Simple count data will then be collected on the use of the investigative questions in the interviews. The frequency of affirmative answers to the questions will be

collected and recorded as percentages for the values of the variables N, P, Q, and R. These values will be the test data for investigative questions 1, 2, 3, and 4, respectively. Pass/fail criteria for the tests are given in "Summary of Decision Rules" below.

The results of these tests will serve as answers to the investigative questions. Next, these answers will be used to test the research hypothesis. Affirmative answers to all four investigative questions is the condition necessary and sufficient to confirm the hypothesis. Finally, confirmation of the research hypothesis confirms the problem statement.

Summary of Decision Rules. The data preparation decision rules are:

(1) Literature sources are classified subjectively in accordance with the "temporal" scheme.

(2) Literature sources are classified as internal if their source can be reasonably determined to be statutory law, case law, Executive Orders, Department of Defense publications, joint service publications, Department of the Air Force publications, or sources under contract to the Air Force.

(3) All other literature sources are classified as external.

(4) Affirmative answers to investigative questions number (1), (2), (3), and (4) are divided by the number of cases and multiplied by 100 to calculate the data points N, P, Q, and R respectively.

The decision rules for data analysis are as follows:

(1) The decision rules for the investigative questions appear in Table 3.

(2) Affirmative answers to all four investigative questions confirms the research hypothesis.

<u>Question</u>	<u>Rule</u>
(1) Peculiar problems exist	True if: $N \geq 50$ False if: $N < 50$
(2) Guidance exists (in the literature or otherwise)	True if: $P \geq 50$ False if: $P < 50$
(3) No specific guide exists	True if: $Q = 100$ False if: $Q < 100$
(4) A guide would be used	True if: $R \geq 50$ False if: $R < 50$

Where: N, P, Q, and R are the percentage of respondents who answer the respective question in the affirmative.

Table 3. Investigative Question Testing Rules

(3) Confirmation of the research hypothesis confirms the problem statement.

(4) Guidance in the literature is classified subjectively by correspondence with the subjects listed in Table 2.

(5) Guidance from the interviews is classified subjectively by correspondence with the subjects listed in Table 2.

If the problem statement is confirmed, the guidance gleaned from the literature and interviews will be summarized in a format commonly used for writing Air Force guides, such as those written by Air Force Logistics Management Center (11; 13; 14; 43). The guidance categories in Table 2 will be used as titles of chapters, and the finished guide will then be appended to this report as an appendix to support the research objectives.

III. Exploration Phase

Interviews.

Informal interviews were conducted by telephone and in person using the questions in Appendix A.

AFIT Faculty. The interviews began in the AFIT School of Systems and Logistics, Department of Contract Management (AFIT/LSP). Here the member of the faculty was selected who was judged to be most familiar with contracting officers' professional development and current issues. The interviewee, Dr William Pursch, is a former National President of the National Contract Management Association (NCMA). Dr Pursch noted that environmental management is a fast growing topic in the Air Force, and involves both contract management and earth science. He also noted that he knows of no literature specifically written as environmental contracting guidance. He noted that at least one AFIT graduate course involves environmental management and is taught by the Department of Logistics Management (AFIT/LSM) (64).

The next interviewee was Lt Col Holt of AFIT/LSM. Lt Col Holt echoed Dr Pursch's statement that he knows of no literature specifically written as environmental contracting guidance, and added that the AFIT environmental management classes were in the process of being expanded into an entire curriculum, with Lt Col Goltz of the AFIT School of Civil

Engineering and Services (AFIT/DE) deeply involved in the process (44).

The next interview included both Lt Col Goltz and Professor Douglas Osgood of AFIT/DE. These gentlemen explained that the current AFIT environmental contracting education effort was being performed as a session of the Air Force IRP Course, and that session was being taught by Professor Osgood. Again, Lt Col Goltz and Professor Osgood echoed Dr Pursch's statement that they knew of no literature specifically written as environmental contracting guidance (40; 58).

Environmental Management. Mr Tony Negri was Director of the Wright-Patterson AFB Environmental Management Office (2750ABG/EM). Mr Negri also echoed Dr Pursch's statement that he knew of no literature specifically written as environmental contracting guidance (54). Mr Negri pointed out that Wright-Patterson AFB is among many bases who have taken the initiative to create an environmental management organization at the same management level as base civil engineering and that it follows the typical EM organizational structure shown in Figure 2.

Air Staff. The last interviewee for exploration was Col (select) James Owendoff, who was Chief of the Air Staff's Environmental Restoration Branch (HQ USAF/CEEV). In this position he was the Air Force's prime contact for the IRP. Col Owendoff was unequivocal on confirming Dr Pursch's estimate. He noted a severe shortage of standardized

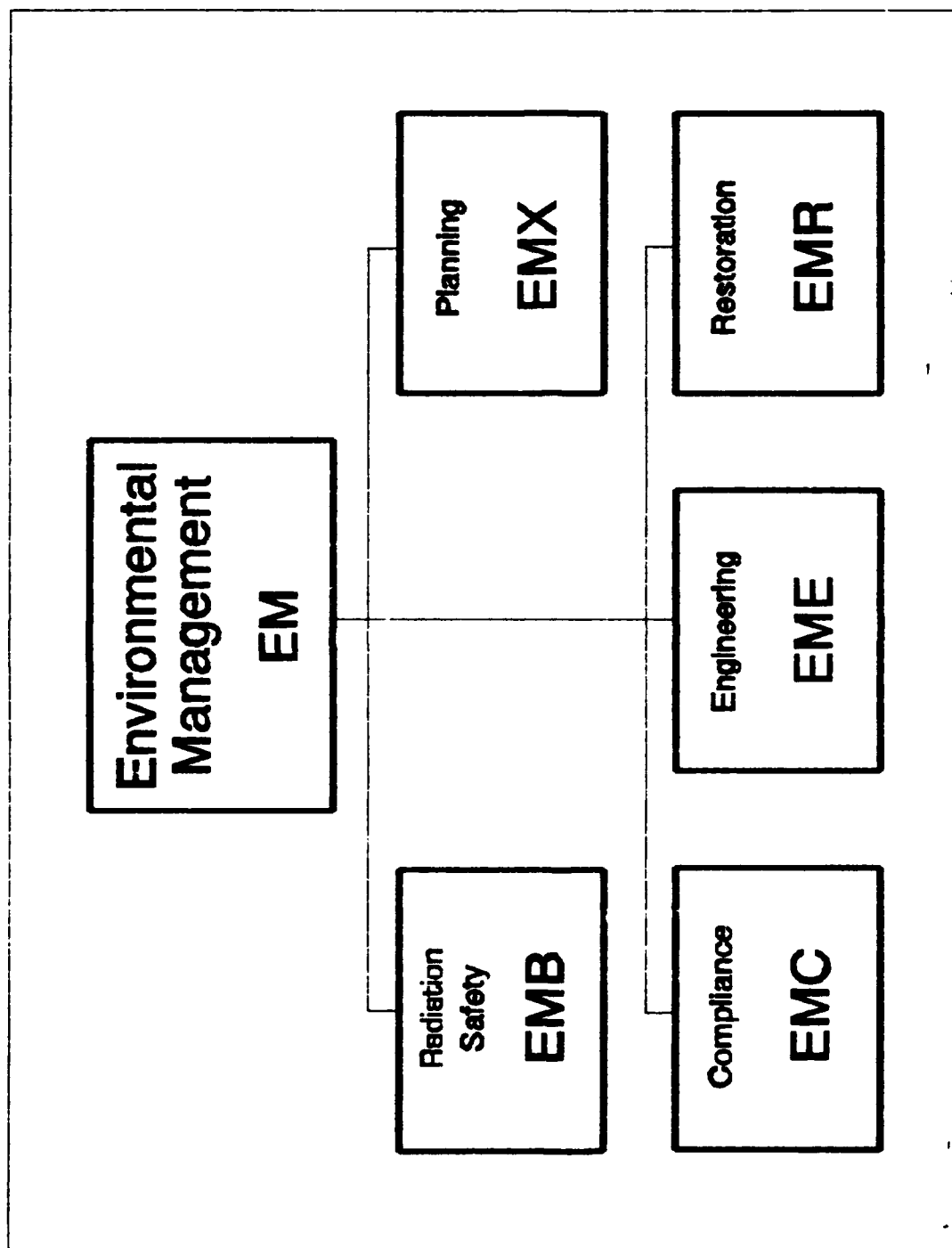


Figure 2. Typical EM Organizational Structure

guidance to environmental contracting, especially in the use of different types of contracts for the different phases of IRP work and said he was so familiar with this lack of guidance that he was initiating "a contract through the [Department of Energy's] operating contract with Battelle [Pacific Northwest Laboratories in Richland, Washington] to write an 'Environmental Contracting Strategy Guide' to address part of the problem" (60).

Exploration of Literature. Lt Col Goltz offered a copy of an article from the periodical The Military Engineer as a source of information for further exploration. The article summarized a Society of American Military Engineers forum held to discuss "programmatic and contractual issues between industry and the military Services" involving "Senior level industry executives and . . . (DoD) representatives" and "moderated by committee chairman Capt. James A. Rispoli, CEC, USN" (10:20). This article notes several problems the services are having in adapting contract management methods to environmental restoration programs and speaks of a "need [for] a systematic process of assembling information to mobilize effectively for work" (10:20).

Correspondence. The same interview questions were sent by mail to Capt Rispoli, who replied on 16 November 1990. The reply noted that one of "The areas [he] would consider the hot topics" for current research was "differences in contract management among the Services" (65:1), indicating

that there is no standardized written guidance to the contracting problems peculiar to environmental remediation.

Summary. The results of the exploration phase indicated that contracting officers have no uniform source of written guidance specific to environmental contracting. This statement was repeated almost verbatim by all the interviewees in the exploration phase. It was also indicated by all the interviewees that although there is a central source of technical guidance for Remedial Program Managers (19:i), there is no parallel for contracting officers.

Exploratory research on the defense contract management literature base, especially the Farquhar thesis (36), also indicated that no studies have been made on the peculiarities of environmental contracting, leading to the conclusion that exploratory research was warranted, especially since exploratory research gives the opportunity for the researcher to develop the guidance and make a practical and (hopefully) useful contribution to the field.

IV. Data Collection Phase

Literature.

Internal Organizations. This classification includes all literature from organizations within the vertical chain of command of the Air Force.

Environmental remediation guidance begins its evolution with the passage of national policy in the form of statutory law. In December 1980, the United States Congress passed, and the President signed into law, the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA (75). CERCLA was "developed after a number of hazardous waste sites, most notably the Love Canal in New York, gained national media attention" (53:65). CERCLA is commonly known as the Superfund Legislation, because one of its main functions was to establish a fund to provide for federal cleanups when no responsible parties could be located (35). CERCLA also required the Executive Departments (including DoD) to initiate an environmental cleanup program to include both operating and deactivated facilities. Funds were appropriated for a five-year program (48:C-5).

Four years later, the National Response Team, an interagency organization formed to "coordinat[e] Federal . . . actions related to oil and hazardous substances releases," (53:i) surveyed CERCLA implementation and found it inadequate at all levels of government. The Superfund

Amendment and Reauthorization Act (SARA) (77) was passed in 1986 in response to this survey and the accident at Bhopal, India where over 2,000 people were killed by a release of methyl isocyanate (53:66). SARA gave continued funding for CERCLA and established deadlines for cleanup actions. SARA Section 211 formally established the already existing DoD remediation program, which is entitled the Defense Environmental Restoration Program (DERP) (59:B-5). SARA also required the Department of Defense (among others) to speed up its program and to expand it to include sites no longer owned by the military (59:C-3).

The DERP program is funded by an appropriations act called (not surprisingly) the Defense Environmental Restoration Act, which creates the Defense Environmental Restoration Account (DERA). DERA is an appropriation of no-year money (at the DoD level) which has no color-of-money (spending only within appropriations category) limits, but is also "fenced." In essence, this means that DERA dollars can be spent for either R&D or procurement, but can only be spent for environmental cleanup (59:C-23). These statutes, which are the primary drivers of IRP, are summarized in Table 4.

Many other environmental statutes have been enacted which affect the IRP program somewhat less directly. Some of these laws are listed in Table 5. In general, these laws regulate the discharge or transport of hazardous waste, whereas CERCLA and SARA regulate the cleanup of those wastes

<u>STATUTE</u>	<u>EFFECT</u>
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	Established standards of liability for polluted sites
Superfund Amendment and Reauthorization Act (SARA)	Established mandatory dates for cleanup
Defense Environmental Restoration Act	Established the DERA account

Table 4. Cleanup Laws (34)

<u>STATUTE</u>	<u>EFFECT</u>
National Environmental Policy Act	Acquisition planning must consider environment
Resource Conservation and Recovery Act	Regulates discharges of hazardous waste
Clean Water Act	Protects surface water
Clean Air Act	Regulates discharges into the air
Safe Drinking Water Act	Protects wellhead areas
Occupational Safety and Health Act	Worker safety program
Federal Insecticide, Fungicide and Rodenticide Act	Controls pesticides
Toxic Substances Control Act	Controls other toxic chemicals

Table 5. Waste Generation Laws (61:44)

already discharged. One of the affects of the discharge laws on IRP projects is that the cleanup projects themselves must guard against creating illegal discharges due to such simple mishaps as spills of contaminated soil being transported after excavation. Likewise, inadequate final disposal can constitute an illegal discharge in itself.

Other statutes that affect the IRP are those that affect Air Force contracting in general. Since these are not unique to IRP contracting, they will only be summarized here. These laws are listed in Table 6. A more detailed listing of the statutes is included in the Glossary of Acronyms in Appendix D.

Executive Order 12580 was written to implement the statutory requirements of CERCLA (as revised and amended by SARA) within the Executive Departments. It gave the DoD substantial authority and responsibility to carry out response actions including cleanup, gives DoD lead agency authority to select remedial actions, requires an administrative record (which includes decision documents), and requires public review and comment on remedial action plans (48:B-4).

The Federal Acquisition Regulation (FAR) is a set of regulations issued to establish "uniform policies and procedures for acquisition by all executive agencies [of the United States]" (55:1.101). It was issued under the authority of the Office of Federal Procurement Policy Act of 1974 and modified the Armed Services Procurement Act of

<u>STATUTE</u>	<u>EFFECT</u>
Armed Services Procurement Act of 1947	Basic law regulating DoD procurement. Created ASPR (now FAR).
Brooks Act	Source selection and negotiation for A-E
Buy American Act	Implements preference for domestic goods
Competition in Contracting Act	Required "Full and Open Competition"
Davis Bacon Act	Prevailing wages on construction contracts
Economy Act	Accomplishment of work by other federal agencies
Miller Act	Bonding requirements
Service Contract Act	Wages on service contracts
Small Business Act	Provides preferences for small & disadvantaged businesses

Table 6. Federal Acquisition Laws (57:1-1)

1947. The structure of the FAR is described to the Part level in Appendix B. The FAR has now been updated to incorporate the requirements of CERCLA (as amended by SARA).

FAR Part 23 is the one section that makes specific reference to environmental quality requirements. This section essentially only creates a contractual requirement for the contractor's existing obligation to follow statutory

law. However, Part 23 has a few other requirements worth noting.

First, Subpart 23.1, entitled Pollution Control and Clean Air and Water, "does not apply to small purchases or to the use of facilities outside the United States"

(55:23.101). Next, paragraph 23.103(b) reads as follows:

Except as provided in 23.104, executive agencies shall not enter into, renew, or extend contracts with firms proposing to use facilities listed by EPA (40 CFR Part 15) as violating facilities under the Air Act or the Water Act. (55:23.103)

The exception paragraph, 23.104, reads in part

(a) . . . contracts . . . are not subject to the restriction in 23.103(b) if they are . . . \$100,000 or under; . . . (b) If the facility to be used is on the EPA List of Violating Facilities for a conviction under the Air Act or Water Act, the exemption in paragraph (a) above does not apply. (55:23.104)

Another notable requirement of FAR Part 23 is that the contracting officer must (in general) include the certification clause at FAR 52.223-1 and the requirements clause at 52.223-2 into solicitations and contracts over \$100,000 or where a "facility to be used has been the subject of a conviction under the [CAA or CWA]" (55:23.105). Lastly, Subpart 23.3 includes a requirement to insert the clause at 52.223-3 when the contract contemplates any delivery of hazardous materials, including any "exposure to hazardous materials in any manner; e.g., performance of work, use, handling, manufacturing, packaging, transportation, storage, inspection, and disposal" (55:23.303). This is modified by DFARS (see next page).

Several other portions of the FAR have a profound influence on how operational contracting is conducted for IRP, even though they do not specifically address environmental topics.

For example, the FAR helps define whether IRP tasks constitute construction (55:36.102), services (55:37.101), or Architecture-Engineering effort (55:36.102). Some of the most important differences are that the FAR requires federal contracting officers to procure A-E services by unique methods (55:36.601), there are differences in bonding requirements (55:28), and contracts involving construction generally require the use of labor standards, including "prevailing wage rates as determined by the Secretary of Labor" (55:2.403-1).

Other relevant FAR requirements are the disallowance of the design-build method of construction "except with specific approval of the head of the agency or authorized representative" (55:36.209), the treatment of fines and penalties (55:31.205), acquisition planning (55:7.102) and need for a D&F for Economy Act actions (55:17.502), and the construction contract exemption from the Uniform Contract Format (55:14.201-1).

The FAR is supplemented by both the Department of Defense (DoD FAR Supplement, or DFARS) and by the Air Force (Air Force FAR Supplement, or AFFARS). DFARS was extensively revised in accordance with the recommendations of the Secretary of Defense's Defense Management Reviews

(DMR) (80:36280). The revised DFARS has been published in the Federal Register and is effective 31 December 1991.

The DFARS supplement to FAR Part 23 instructs "DoD agencies [to] follow policies and procedures set forth in 223.72 rather than the coverage in FAR 23.3" (16:223.3). DFARS 223.72 defines the use of hazardous materials and specifies that when they are to be used, the clause at DFARS 252.223-7004 shall be used in solicitations and contracts (16:223.72).

AFFARS requires that "HQ AFSC and HQ AFSC shall establish dollar thresholds for mandatory application of should-cost on non-competitive production contracts" (20:15.810). However, it also gives the following instruction:

Should-cost techniques may also be applied to contracts below the mandatory dollar thresholds when the contracting office determines that significant savings can be achieved in comparison to the resources applied to Should-cost.
(20:15.810)

The DoD issues detailed operating procedures and guides for implementing the FAR requirements. One of these is the Armed Services Procurement Manual for Contract Pricing (ASPM No. 1). According to the FAR, the ASPM was

issued by the Department of Defense to guide pricing and negotiating personnel. It provides detailed discussions and examples applying pricing policies to pricing problems. Copies of [the ASPM] can be purchased from the Superintendent of Documents, Attn: Mail List Section, U.S. Government Printing Office, Washington, DC 20402.
(55:15.804)

Another document published by the DoD is a guide to developing a detailed acquisition strategy (17).

The Air Force publishes regulations, manuals, and pamphlets to implement the FAR and DoD requirements. These documents are listed in Air Force Regulation 0-2 (25). Air Force Regulations and Manuals which directly affect environmental quality efforts include:

AFR 12-30	Air Force Freedom of Information Act Program
AFR 19-1	Pollution Abatement and Environmental Quality
AFR 19-2	Environmental Impact Analysis Process
AFR 19-3	Environmental Impact Analysis Process Overseas
AFR 19-4	Use and Control of Off-Road Vehicles
AFP 19-5	Environmental Quality Control Handbook
AFR 19-6	Air Pollution Control Systems for Boilers and Incinerators
AFR 19-7	Environmental Pollution Monitoring
AFR 19-8	Environmental Protection Committees and Environmental Reporting
AFR 19-9	Interagency and Intergovernmental Coordination of Land, Facility and Environmental Plans, Programs and Projects
AFM 19-10	Planning in the Noise Environment
AFR 19-11	Hazardous Waste Management and Minimization
AFR 19-14	Management of Recoverable and Unusable Liquid Petroleum Products
AFR 19-16	Environmental Compliance Assessment and Management Program
AFR 70-1	Dos and Don'ts of Air Force - Industry Relations
AFRP 70-1	Contracting and Manufacturing Newsletter
AFP 70-1-5	DoD/NASA Incentive Contracting Guide
AFR 70-5	Should Cost
AFP 70-6	Guide for Air Force Base Level Pricing
AFR 70-8	Base Contracting Functions
AFR 70-9	Base Level Service Contract Administration
AFR 70-14	Business Strategy Panels
AFR 70-15	Formal Source Selection for Major Acquisitions
AFR 70-18	Local Purchase Program
AFP 70-21	Guide for Monitoring Contractors' Indirect Cost
AFP 70-22	Administration of Progress Payments
AFR 70-30	Streamlined Source Selection Procedure

AFM 70-333 Base Contracting Automated Systems (BCAS),
End Users Manual ("On-line" Document)
AFR 85-10 Operation and Maintenance of Real Property

Some of these and many other Air Force publications affect the IRP program in a less direct way. Many such publications predate the IRP and were in place to implement the existing methods of systems acquisition and facilities construction and maintenance. Much of the work to implement these requirements is performed by other organizations at the same reporting level as operational contracting. Each of the items listed below is an entire series of such publications, which help to implement the IRP indirectly.

AFR 85-	CE-General
AFR 86-	CE-Planning & Programming
AFR 87-	Real Property Management
AFR 88-	Facility Planning and Design
AFR 89-	Facility Construction
AFR 91-	Real Property Operation and Maintenance
AFR 126-	Natural Resources
AFR 172-	Budget
AFR 173-	Cost Analysis
AFR 177-	Accounting and Finance
AFR 178-	Cost and Management Analysis
AFR 190-	Public Affairs
AFR 800-	Acquisition Program Management

The Installation Restoration Program (IRP) is established by AFR 19-7, which defines it as "the identification, recognition, evaluation, and control of pollution problems at past hazardous waste disposal sites" (21:1). This regulation tasks Air Force Commanders with the responsibility to "Develop and implement . . . programs that comply with . . . [FWPCA, CAA, NCA, MPRSA, RCRA, FEPCA, TSCA, CERCLA, and SDWA] . . . [and] other federal state, and local environmental laws, regulations, standards, and

criteria that apply to federal installations" (21:2). The Base Civil Engineer is tasked directly with conducting IRP: "[the BCE] Starts facility programming action or operational modifications to correct violations of standards or trends in pollution concentrations that could lead to violations" (21:5). This regulation also includes a note that reads as follows: "Federal environmental statutes do not apply overseas; however, when practical, environmental monitoring policies and responsibilities of this regulation are applied overseas. US Air Force installations and facilities overseas must comply with applicable host country laws and regulations on environmental monitoring" (21:2). Another salient requirement of the Air Force Regulations is the AFR 19-8 requirement for both contracting and technical activity representation on a base-level Environmental Protection Committee (21:1).

HQ USAF/CEEV has produced a guide to IRP policy and program strategy (19) and is currently producing two guides for the EM community, which address technical matters (22) and give the technical OPR an overview of the contracting function (23). CEEV has also held a symposium to discuss IRP issues (1).

The Air Force Inspector General (IG) has published a report on a Functional Management Inspection it conducted to examine the interface between base level Civil Engineering and Contracting offices (26:1). This inspection report is a privileged document and not releasable outside the Air Force

without express SECAF approval (26:1), and so its detailed purposes and its findings will not be disclosed here.

Another source of information for the IRP program within the Air Force is the Air Force Logistics Management Center (AFLMC). AFLMC publishes guides for operational contracting in general, such as their Base Contracting Officer Handbook (13), Construction Branch Chief Guide (14), and their Construction Contract Administrator's Technical Handbook (43). AFLMC has also published a guide to the use of award fees at the operational level (11).

The various military Services publish training materials for employees involved directly and indirectly in IRP contracting. In the Air Force this effort is epitomized by the recent establishment of the "Air Force Center for Environmental Restoration" (70:39) at the AFIT School of Civil Engineering and Services (AFIT/DE). The school produces texts for its Professional Continuing Education courses that address the IRP program, including MGT 021, the USAF IRP Course, and MGT 425, Contract Preparation and Management. The MGT 425 course uses texts entitled Civil Engineering Guide to the Acquisition Regulations (57) and Construction Contract Formation (56). AFIT is also "developing a model program to educate the environmental managers of the '90's" (70:39) in cooperation with the US EPA. This master's degree program in environmental and engineering management is producing new course materials

which will be available to future students and researchers (44).

The IRP Course textbook consists of regularly updated briefing charts from AFIT, HQ USAF/CEEV, the major service agents, and others involved in IRP (41). These charts give an overview of the workings of IRP and the program's current status and discussing common problems. One of the briefing charts regularly included in the course summarizes the phases of an (idealized) IRP project and is quite helpful in discussing IRP project phases as they affect acquisition planning. This chart is shown in Figure 3.

The IRP Course also includes briefings from the major service agencies. These are organizations which conduct IRP contracting and administration and provide technical support for Air Force installations. Some of the service agencies are outside the Air Force and provide these services through interagency agreements as mandated by the Economy Act (18:1). The four major service agents are Air Force Human Systems Division (HSD), the Army Corps of Engineers, Missouri River District, the U. S. Navy Facilities Engineering Command (NAVFAC), and HAZWRAP, a wholly owned subsidiary of Martin Marietta Corporation formed at the direction of the Department of Energy in 1984. In the IRP course, each of these service agencies outlines its contracting strategies in a set of briefing charts. A copy of the charts from the June 1991 course (41) is attached as Appendix C for the sake of brevity in this summary.

Installation Restoration Program **TERMINOLOGY**

Validate as Site → How Dirty/How to Fix → The Fix → Finished

PA/SI Stage

- ☐ Discovery & Notification
- ☐ Preliminary Assessment
- ☐ Site Inspection

RI/FS Stage

- ☐ Scoping
- ☐ Development of Alternatives
- ☐ Characterization
- ☐ Screening of Alternatives
- ☐ Treatability Investigation
- ☐ Detailed Analysis
- ☐ Selection of Remedy
- ☐ Decision Document

RD/RA Stage

- ☐ Remedial Design
- ☐ Remedial Action
- ☐ Post-Project Activities

NFA Stage

- ☐ No Further Action
- ☐ Decision Document

Figure 3. Stages of an IRP Project

Several AFIT graduate theses have been written which are related to IRP contracting. One student, for example, analyzed ways to improve the BCO/customer interface (39). Two studies were conducted in parallel with this guide, to be completed in September 1991. The first analyzed the present internal goals of the IRP program, (81), while the other studied the relative effectiveness of various ways of organizing for the EM function (2).

External Organizations.

NAVFAC has published a comprehensive guide to hazardous waste cleanup technologies (30). This guide is put together by NAVFAC's Naval Energy and Environmental Support Activity (NEESA). While this guide is primarily directed toward providing IRP program managers with technical information, it also contains some detailed pricing information. The Navy also publishes general guides to operational contracting which contain guidance to situations encountered in IRP contracting (31).

The U. S. Army Corps of Engineers (USACE) Institute for Water Resources has published a study on bonding problems in remediation contracting. The addresses the definition of "incidental" construction as follows:

Existing DOL regulations do not define incidental construction. Guidance on this issue, however, may be derived from advisory memoranda issued by the DOL's wage and hour administration relating to construction projects comprised of different categories or schedules (building, heavy, highway, and residential). As a general rule, DOL advises contracting officers to incorporate a separate schedule when such work is more than incidental to

the overall or predominant schedule. 'Incidental' is here defined as less than 20% of the overall project cost. DOL notes that 20% is a rough guide, inasmuch as items of work of a different category may be sufficiently substantial to warrant separate schedules even though these items of work do not specifically amount to 20% of the total project cost. This same rationale may apply to contracts involving services and construction. (28:12)

The U. S. Army Toxic and Hazardous Materials Agency (USATHAMA) has published a report on remediation technologies which includes pricing information (29).

- The U. S. General Accounting Office publishes reports on the performance of Executive branch programs. While to date there have been no reviews of the USAF IRP program, there has been a GAO review of a comparable activity, the EPA's Superfund Program remedial action studies contracts. Much of the EPA experience was with cost-plus-award-fee contracts. Unfortunately, much of this experience was bad. The GAO reported that "EPA has not sufficiently monitored, controlled, and challenged contractor expenditures and professional hour usage for remedial studies (79:2)."

The U. S. Department of Transportation and the Federal Emergency Management Agency operate a computer remote bulletin board system entitled the Hazardous Materials Information Exchange (HMIX). HMIX has information on training for response to hazardous waste spills, site assessments, risk assessments, ground-water remediation technologies, treatment technologies, community relations, quality assurance, and many other topics related to IRP,

including listings of trade associations, local government organizations, and calendars of conferences. There are also sources of instructional materials, lists of toll-free numbers and other on-line databases, information on laws and regulations, lists of federal government contacts, and information specific to states (32:9-11).

As mentioned earlier, the U. S. Department of Energy (DOE) acts as a service agent through its Management and Operating (M&O) contract with HAZWRAP. In addition, the DOE provides contractor support to the IRP through an M&O contract with Battelle Pacific Northwest Laboratories (23:iii). Through this contract Battelle is currently drafting an IRP Contracting Strategy Guide for HQ USAF which will use survey data to analyze the use of different contract types by bases and service agents (23:i).

The U. S. Department of Commerce publishes a journal entitled Construction Review. Each year, in the January/February issue, Construction Review contains a "Directory of National Trade Associations, Professional Societies, and Labor Unions of the Construction and Building Materials Industries" (15:vi).

The U.S. Environmental Protection Agency (there are also state EPAs) publishes many documents pertaining to IRP cleanup. Their EPA Catalog of Superfund Program Publications (78) lists and describes these publications. The catalog includes publications on EPA experience with contract management techniques including types of contracts,

management interfaces, claims, and other topics, including financial management. Notable examples are their Remedial Action Costing Procedures Manual (78:24) and Removal Cost Management Manual (78:25). The catalog also lists numerous publications on technical topics and other functional areas, such as public affairs.

Many state governments have exercised their prerogative to assume primacy over pollution control programs, according to the U.S. EPA (61:42). However, these state programs often rely, at least in part, on program and technical standards developed by the U.S. EPA and on federal supplementary funding. State governments also define Architect-Engineer services, as noted by the FAR (55:36.102). These definitions are often standardized by reciprocity agreements. As a rule they are defined as tasks requiring the services of a professional, which is defined using educational accreditation, experience requirements, and testing.

One professional society which has published materials relevant to IRP contracting is the National Contract Management Association (NCMA). A recent issue of its semi-annual journal contained an article that deals with risk management and the myriad of hazardous waste liability issues. In this article, the author stated:

Whether they are involved with the government as operators of government-owned, contractor-operated facilities or in production contracts carried out at their contractor-owned, contractor-operated facilities, contractors must be aware of contract

law associated with environmental requirements, civil litigation, and criminal law. (50:45)

The NCMA also has a less formal monthly publication entitled Contact Management Magazine. The contents of these two publications were analyzed in some depth in a recent graduate thesis (36). The NCMA has also published an extensive review of contract management literature entitled the APPL Bibliography of Procurement Education Materials (63). At the time of this writing, that bibliography is in the process of being updated (64).

Another professional society which publishes literature related to IRP contracting is the Institute of Industrial Engineers. A recent issue of their journal noted that one reason that the amount of environmental contracting is increasing is the Congressional mandate to close many military facilities. Closure requires remediation of all environmental damage done on each base. Specifically, "the National Environmental Policy Act . . . requires the preparation of an Environmental Impact Statement to assess [cleanup and] reuses of the land (71:560)." Another article in this journal pointed out that the life-cycle cost of using hazardous materials often dwarfs the savings generated in their use. The article stated:

[Industrial engineers] have developed 'true cost' models to show the real cost of using these hazardous materials. . . . Results show the true cost is often seven to 10 times the purchase price. Costs associated with hazardous materials/waste are typically not value adding. (74:47)

Another professional journal, Public Administration Review, occasionally examines related topics. A recent issue noted that receipts from military land sales go "not to the military branch holding the asset but to the Land and Water Conservation fund of the Treasury (71:558)." As a result, cost effectiveness must be induced through effective management, which requires adequate guidance.

Another journal noted that the Army Corps of Engineers has a considerable amount of experience with nontraditional IRP contracts. Their environmental restoration work "is in the \$300M range," and "80% of the [engineering] is cost-plus. Construction is split between firm-fixed-price and cost-plus (69:1)."

Several trade organizations publish periodicals which cover IRP contracting issues. One of these is Chemical Week. In a recent issue, it was pointed out that a growing number of companies with expertise in removing hazardous chemicals from groundwater are being attracted to the market for two reasons: the size of the appropriations under the Superfund Amendment and Reauthorization Act, and the huge number of contaminated sites. The article pointed out that the U. S. EPA lists over 15,000 sites on federal land with potential groundwater problems (9:50-52). Another article in Chemical Week pointed out that entry barriers such as the tendency for IRP projects to be large and capital intensive can also work to the advantage of firms already in the business by further limiting competition. For example, many

large chemical manufacturers are finding that their existing capital facilities and management structures make entry into this expanding field quite lucrative. The article illustrated this by saying

Chemical companies may own a site to handle their own wastes, have the technical expertise, and have the necessary community support for their operations, making them ideal for the hazwaste business. (42:28)

A trade journal for the major construction industry, ENR (formerly Engineering News-Record), recently pointed out that construction firms are finding that high costs and complicated regulations sometimes inhibit technical advancement. As testimony, they quoted a recent speaker before the American Consulting Engineers Council who noted that "The high cost of developing a waste cleanup demonstration project precludes an owner from taking a chance on an unproven technology (7:12)." Another ENR article recounted that the Navy had some undesirable experience at first in applying traditional contracting techniques to environmental management. "Our normal fixed-price contracts were not suited for this type of work, which is indeterminate in scope," said CDR John G. Dempsey, assistant commander for the Naval Facilities Engineering Command's environmental programs. "We were starting to bump the upper dollar cap almost routinely (49:84)." An ENR editorial column, the "Washington Observer" editorialized recently,

Banking and small business lobbying groups, including some in construction, would like to restrict the courts' interpretation. The Small Business Administration, which sometimes functions as a co-lender, is also concerned. But [EPA] officials are resisting the idea of tinkering with Superfund piecemeal. They argue instead that any changes should be addressed during the reauthorization process next year. (8:7)

Another ENR article spoke of how letting separate contracts for IRP project phases affects cost:

The changing cleanup marketplace is forcing hazardous waste firms to become chameleon-like. . . . With clients demanding more 'cradle-to-grave' waste management services and more one-stop shopping, companies have already begun crossing market lines to stay competitive. If you're going to shake out and be a leader, you have to be a vertically integrated, full-service company. . . . Clients really want turnkey service. They don't want to go through multiple contracts. (67:36)

Lastly, ENR recently assessed the profitability of A-E contracts for IRP. The article points out that there are

several risks . . . that are not commonly present in other areas of practice. These include strict liability in addition to the standard of care, joint and several liability, difficulty of obtaining pollution insurance, lack of a clear-cut definition of standard of care in a rapidly evolving technology, potential patent infringement, dealing with unknown underground conditions, unreasonable client expectations, and possible damages far beyond the financial capability of most engineering firms. (47:E25-E27)

This article is one of few that actually quantifies the economic effect of this risk. Kleinfelder quotes an industry survey which found "costs averaged an additional \$12 to \$13 per billable hour" (47:E25).

The journal of the Water Pollution Control Federation indicates that the use of A/E effort on IRP contracts will

continue to increase, leading to further need for managing mixed procurements. Two items serve to illustrate this increasing need. First, professional engineering services are usually needed for site characterization, which is defined as:

assess[ing] the background water quality -- the water quality before contamination; to establish the impact of certain facilities, practices, or natural phenomenon on water quality -- the extent of contamination; and to predict future groundwater quality trends under various conditions -- the impact of various remedial actions. (5:1415)

Another trade periodical which sometimes examines topics related to remediation contracting is Business Insurance. A recent article examined current and future liability problems. The article noted that due to a recent court decision, financial institutions can become liable for hazardous waste cleanup costs on properties in which they hold a security interest. According to Joseph C. Berger, an attorney who specializes in environmental law,

the decision will make lenders think twice before getting involved in any manner with debtors who have property that in any way has a risk of pollution. (83:49)

Another trade journal which discusses environmental risks is Risk Management. A recent article points out that under contract to the EPA, contractors have developed risk models which evaluate the hazards of waste streams, and that these have been used to develop the EPA's National Priorities List. The article noted that under EPA guidance, the process of risk assessment "has been developed to a

fairly high degree of sophistication (62:42)." However, this modelling is fairly recent and addresses only technical risk -- that is, risk due to the physical effects of the waste. The EPA has not attempted to model risk due to liability and regulatory policies, and so the business of surety is still evolving in this area.

Many sources pointed out that since the enactment of Superfund in 1980, cleanup technologies for hazardous waste have been undergoing development at an accelerating pace. Since there are a large number of combinations of site conditions and chemical compounds, many new technologies must be developed. A typical comment from a contractor is "Contaminations are usually so complicated that cleanup measures must be determined on a case-by-case basis (46:49)."

Other professional and trade journals that are likely to publish articles in the future that are related to IRP are listed in the Department of Commerce's Construction Review (15).

Several commercial publishers produce guides on government contracting in general. Such guides are often written with contractors as an audience rather than being written for government contracting officers. Examples of these are Government Contract Guidebook (3) and Government Contracting under the FAR (and CICA) (72). These and other such guides are listed by the NCMA (63).

Commercial publishers also produce handbooks for managing the type of companies involved in IRP contracting. In one of these, Construction and Engineering Marketing for Major Project Services, a topic of discussion is the practice of letting a single contract for design and construction. This practice is often called "design-build" or "turnkey" (38:69) contracting. The author of this text points out that this approach presents some advantages. One is that "from the owner's point of view . . . it assigns total responsibility to one organization." Gerwick also points out that this can be an advantage to the contractor. A single contractor is responsible for both design and construction, when a defect appears, the contractor knows who is responsible, and he can "step in promptly, correct the defect, and mitigate the loss" (38:247). Gerwick also points out that turnkey "may expedite the work, permitting construction to start before the design is completed" (38:69).

Another standard handbook on contracting company management explains that the use of the design-build practice is recognized as a normal part of doing business in the private sector. He states that:

Building construction . . . includes general contractors who control the entire construction process under a single contract, general contractors who operate under separate contracts along with specialty contractors who have direct contracts with the owner for such areas as mechanical and electrical work, and general contractors who function as design-build firms that can offer the owner a complete package which

often includes site selection, design, construction, and 'shakedown' operation. A significant amount of building construction . . . also involves the construction management approach where a firm representing the owner is responsible for holding design work within budget and putting together bid packages that go out for competitive bids as the design work progresses. On private building projects any of these approaches may be selected by the owner. On government work, from federal to local, the separate contract may well be mandated by law. (85:1.6)

Case Studies. The findings of the case studies are given here in narrative form in an order corresponding to the list of case studies, Table 1.

Case 1 was a telephone interview. The call was to Headquarters, U.S. Air Force, Environmental Restoration Division (60). Colonel (selectee) James Owendoff related that one of the current operating problems in environmental contract management is that no uniform guidance is available to describe contracting strategies, and that one of the major symptoms of this is that bonding and other indemnification issues are not well understood. Colonel Owendoff noted that what written guidance exists on these issues is difficult for operational contracting organizations to find because it is scattered in numerous publications. Because of this state of the literature, Colonel Owendoff stated that he was requesting that the Department of Energy task Battelle's Pacific Northwest Laboratories to produce an Environmental Contract Strategy Guide to produce guidance on applying contract types. Colonel Owendoff also indicated that an Air Force IRP

contracting guide is still needed because his guide is primarily targeted toward the OSC/RPM, or technical manager, and does not attempt to systematically address the problems faced by contract managers. In addition Col Owendoff noted that he was confident that a (well written) contracting officer's guide would be used in the field and could supplement his efforts to review Battelle's accomplishment of the contractual tasks.

Case 2 was also a telephone interview. The call was to the Office of the Secretary of the Air Force, Headquarters, U.S. Air Force, Directorate of Contracting and Manufacturing Policy (SAF/AQC). The interview was with Lt Col Byard B. Bower, who was the Contracting and Acquisition Management Staff Officer. Colonel Bower noted that he was aware of the fragmented nature of IRP contracting guidance, and knew that the valid requirement for standardized guidance was as yet unfulfilled. He spoke of several difficulties being faced in IRP contracting. First, he noted that "contract administration is a big area. As we get more remedial action contracts we expect a landmine of changes due to differing site conditions and regulatory problems" (6). He expressed hope that we can combat some of this by "creating more of a SPO-like environment to deal with changes" (6). Another area he emphasized was that "we are having trouble incentivizing the contractors. Most of our contracts are now for RI/FS effort, and we have trouble getting the designers motivated to get remedial action underway." He

expressed hope that some of the "new" contracting techniques being tried would combat this, including the AFLC idea of using a single contractor for "bridging" from PA/SI through RI/FS and doing the remedial design, then re-competing the remedial action and using the first contractor to do Title II A-E services (part of the contract administration for remedial action). Lastly, Colonel Bower expressed his opinion that "we should not rule out the use of turnkey contracting when it can be justified, although this is difficult" (6).

Case 3 was a personal interview at Headquarters, Air Force Logistics Command, Directorate of Environmental Management. In this interview, Mr Michael J. Trimeloni of the Environmental Restoration Division noted that there are many problems and a few innovative solutions in matching contract types to the phases of IRP projects. Mr Trimeloni also noted that there are no apparent sources of concise written guidance for IRP contracting that the existing guidance is fragmented in the literature, and that the requirement is a valid one (73).

Case 4 was a personal interview at Headquarters, Air Force Logistics Command, Directorate of Operational Contracting. Similarly, in this interview, Mr C. Wayne Loyd noted that there are many problems and a few innovative solutions in matching contract types to the phases of IRP projects. Mr Loyd also noted that there are no apparent sources of concise written guidance for IRP contracting,

that the existing guidance is fragmented in the literature, and that operational contracting officers do use such guidance (51).

Case 5 was a personal interview at the Environmental Management (EM) Office, 2750ABG, Wright-Patterson Air Force Base. The EM Chief, Mr Negri, related that one of the current operating problems in environmental contract management is that no uniform guidance is available to describe contracting strategies. Mr Negri also noted that the available literature, while expanding, is as yet insufficient for the daily requirements of operational contracting and that standardization is needed (54).

Case 6 consisted of three personal interviews at the Operational Contracting Division of the Wright-Patterson Contracting Center. Maj Miles first explained how WPCC organizes for IRP contracting. Before doing any IRP contracting, the Division was organized into four branches: a Form 9-BCAS Branch (PMKA), a Commodities Branch (PMKC), a Services Contracting Branch (PMKS), and a Construction Contracting Branch (PMKE). When some IRP contracting began, the Division accomplished contracting tasks along these divisional lines, but then found that with the advent of IRP contracting the work could be better accomplished if organized according to customer rather than along strict functional lines. Subsequently, the Division began to assign all contracting for BCE and EM requirements to the Construction Contracting Branch, and found that this

improved communications. In addition, it was found that this organizational strategy improved service due to the increased ability to build corporate memory. Lastly, Maj Miles noted that WPCC recently awarded the Air Force's first major remedial action contract. He pointed out that this is an IDIQ contract with separately competed task orders, and that WPCC was then in the process of debriefing all unsuccessful offerors. He suggested using this contract as a model for Air Force remedial action efforts (51).

Mr Ira Garrett, Chief, Construction Contracting Section (PMKEB), and Ms Carol Young, Buyer, also had several comments. The questions and answers follow:

1. WHAT EXACTLY IS YOUR POSITION? DO YOU HAVE AN ORG CHART?

PMKEB Section Chief (Construction Branch, Buying Section). Organizations are listed on the posted telephone list.

2. WHAT ARE THE RESPONSIBILITIES OF YOUR POSITION WITH RESPECT TO ENVIRONMENTAL REMEDIATION CONTRACTING?

We do all the contracting for CE and EM requirements.

3. IS THIS THE RIGHT WAY TO ORGANIZE FOR ENVIRONMENTAL CONTRACTING?

Yes, we've found it to be very efficient.

4. IS IT GOOD THAT ALL CE AND EM SUPPORT IS DONE BY YOUR BRANCH, OR WOULD YOU RATHER HAVE IT CHANGED BACK (GIVE A-E AND CE SERVICE CONTRACTS BACK TO PMKS)?

It's better this way, except that our people don't always get enough recognition. CE tends to be a 'firefighting' organization and is often happy just to keep out of trouble. They don't send letters of recognition for outstanding support like EM does. This is a real problem. We've lost good people because they didn't want to deal with CE. Of

course, we understand their position and we will continue to give professional service anyway.

5. WHAT ARE SOME OF YOUR CURRENT OPERATING PROBLEMS IN ENVIRONMENTAL CONTRACT MANAGEMENT?

Just this moment we are busy but don't have many problems. We are quite proud of the success we are having with our IDIQ remedial action contract.

6. ARE THERE PROBLEMS PECULIAR TO IRP CONTRACTING?

Yes. Since it is so new, there is little standardized guidance.

7. DO YOU KNOW OF ANY LITERATURE ON IRP CONTRACTING?

Yes, a lot of periodicals have information on the IRP in addition to DoD publications.

8. DOES THE GUIDANCE AVAILABLE FROM THIS LITERATURE FULFILL YOUR OPERATIONAL NEEDS?

No. There are too many sources to keep up with.

9. DO YOU KNOW OF ANY COMPREHENSIVE GUIDE?

No.

10. IF SUCH A GUIDE EXISTED, WOULD IT BE USED?

Yes, it certainly would.

11. WHAT THINGS ARE TAKING UP MOST OF YOUR TIME NOW?

Right now we're in the process of debriefing the unsuccessful offerors on our IDIQ contract.

12. HOW DO YOU GO ABOUT GETTING PRICING INFORMATION? WHAT SOURCES ARE THERE?

Mainly detailed information from the customer and procedures from the AFLC Pricing Handbook.

13. DO YOUR PEOPLE GET ANY ENVIRONMENTAL EDUCATION?

Not yet, but we're working on getting our people to AFIT environmental education now that we've found out (by word of mouth) that it's available.

14. WHAT IS THE SYSTEM FOR PRE-COORDINATION OF ACQUISITION PLANNING?

PMK takes the initiative on acquisition planning, not the user. PMK has to pursue technical inputs along with pricing support.

15. DO YOU DO ANY WRITTEN ACQUISITION PLANS?

Certainly. IRP contracts tend to be major purchases and require a formal Source Selection Plan. The SSP has to address the same topics required for acquisition plans. AFLC wrote several policy letters giving detailed procedures for writing SSPs. Some of this was integrated into AFLC's own FAR Supplement. This was done in part 15.512.91.

16. DO YOU PARTICIPATE IN THE BASE EPC (AFR 19-8)?

Our Commander (the WPCC Commander) does and we get copies of the minutes. These are sometimes helpful to long range planning because we find out about construction projects in the initial phases of planning and can help coordinate IRP work with the construction.

17. USE SHOULD-COST?

Yes, but rarely.

18. DO YOU GET INVOLVED IN FUNDING REQUESTS FOR DERA MONEY?

This is mostly a user function, with parts 'farmed out' to PMK.

19. ARE YOU AWARE THAT DESIGN-BUILD IS POSSIBLE WHEN IT'S REALLY IN THE BEST INTEREST OF THE GOVERNMENT AND CAN BE ADEQUATELY JUSTIFIED AS SUCH?

Yes, but it's too risky. We're afraid that PMK will become the program integrator.

20. ANY COST-TYPE CONTRACTS? IF SO, ARE THERE SUFFICIENT CONTRACT ADMINISTRATION RESOURCES?

No. We're aware that this is a problem, which one reason we've gone to an IDIQ contract.

21. HOW DO YOU GET THE SOURCES ON YOUR BIDDERS' LISTS?

We have lots of sources. We got most of these by doing a sources-sought synopsis in the CBD. There are presently 214 sources.

22. DO YOU THINK THAT ADVERTISING IN OTHER THAN THE CBD (TRADE JOURNALS, PROFESSIONAL JOURNALS, ETC) MIGHT NET SOME NEW SOURCES?

We doubt it. We think that we've got a pretty good handle on the sources. If we were to do this, we would get the same sources, because of the character of this work.

23. DO YOU ALWAYS DEBRIEF ALL UNSUCCESSFUL OFFERORS?

Yes, at least on major contracts. Not on a standard RFP.

24. ANY SUGGESTIONS FOR OTHERS DOING REMEDIAL ACTION CONTRACTING?

Yes. Make sure that all solicitation packages are reviewed by an environmental lawyer early in the process. Because of the complexity of environmental laws, this will often save some major headaches downstream. Think seriously about using IDIQ task-order contracts. We have ours on-line now and this is the only major Remedial Action Contract yet approved by Air Staff. We are competing the task orders and should be able to get a lot of fixed price work (not quite FFP, but at least FPIF). Make sure you do early work to get evaluation criteria for source selection and award fees spelled out in detail. (37; 84)

V. Analysis and Conclusions

Introduction. The first section of this chapter summarizes the preparation of the data, then analyzes the results of the case studies. The results of this analysis are used to answer the research questions for the purpose of testing the research hypothesis and subsequently verifying the problem statement. The next section shows the translation of the guidance from Chapter IV into the format needed to write the guide, Appendix D, through classification and summarization of the data. The concluding sections of the chapter present conclusions and recommendations.

Data Preparation.

Classification of Sources. The first act of data preparation, the internal/external classification of publications, resulted in the following group of literature sources being classified as internal (numbers correspond to the numbering in the bibliography of this report):

1, 2, 4, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23,
25, 26, 34, 35, 36, 39, 41, 43, 48, 55, 56, 57,
59, 65, 66, 69, 70, 75, 76, 77, and 81.

The literature sources that were classified as external are:

3, 5, 7, 8, 9, 10, 12, 15, 18, 28, 29, 30, 31, 32,
38, 42, 46, 47, 49, 50, 53, 61, 62, 63, 67, 68,
71, 72, 74, 78, 79, 80, 82, 83, and 85.

Next, these sources were subjectively ranked within these classifications on a temporal basis. This resulted in the order in which they are described in the Data Collection Phase, Chapter IV.

Summary of Case Findings. Raw data from the interviews is shown in Table 7.

		INVESTIGATIVE QUESTION			
		1	2	3	4
CASE	1	Y	Y	Y	Y
	2	Y	Y	Y	Y
	3	Y	Y	Y	Y
	4	Y	Y	Y	Y
	5	Y	Y	Y	Y
	6	Y	Y	Y	Y

Table 7. Interview Data

Preparation of Case Data. Data from Table 7 is summarized in Table 8. The data here are affirmative answers as a percentage of total answers.

INVESTIGATIVE QUESTIONS			
1	2	3	4
$\frac{1}{100}$	$\frac{2}{100}$	$\frac{3}{100}$	$\frac{4}{100}$

Table 8. Data Summary

These values give the values for the test variables as shown in Table 9.

TEST VARIABLES			
<u>N</u>	<u>P</u>	<u>Q</u>	<u>R</u>
100	100	100	100

Table 9. Values of Variables

Data Analysis.

Application of Decision Rules. The application of the decision rules to verifying the investigative questions is shown in Table 10.

<u>Question</u>	<u>Rule</u>	<u>Data</u>	<u>Result</u>
(1)	True if: $N \geq 50$ False if: $N < 50$	$N=100$	Verified
(2)	True if: $P \geq 50$ False if: $P < 50$	$P=100$	Verified
(3)	True if: $Q = 100$ False if: $Q < 100$	$Q=100$	Verified
(4)	True if: $R \geq 50$ False if: $R < 50$	$R=100$	Verified

Table 10. Application of Decision Rules

As a result of the verification of all four investigative questions, the hypothesis is judged to verified. As a result of the verification of the hypothesis the problem statement is confirmed.

Classification of Guidance. Since the problem statement was confirmed, the guidance is classified into the categories below, which are taken from Table 2. This was done by moving sequentially through the sources in Chapters III and IV, classifying each source into one of the areas listed in Table 2, and summarizing the guidance from that source into the paragraphs below. This section serves as a tool as well as a record. As a tool it helps to summarize the data of Chapters III and IV, and as a record it takes the form of a cross-reference showing the path by which data is translated from those chapters into the format needed to write the Guide, Appendix D. In this section, these cross-references are shown in the following formats: {page:paragraph} or {case number}. Note that all references in these formats are to Chapters III and IV, not to the Bibliography.

Introduction. Many of the sources provide background material on the IRP program which can serve as an introduction to the guide.

The environmental statutes themselves {24:2; 25:1} and the NRT report {24:3} provide background on the intent of the legislation and the funding mechanism for IRP.

IRP course briefing slides describe program funding and technical implementation {36:1}. Several sources, especially ENR articles {44:2} and IRP briefing charts {36:1} indicate that the workload in IRP contracting will rise significantly in the coming years. To support this

conclusion these sources cite the passage of comprehensive environmental legislation, the aggressive goals of the IRP, the mandates to close many military bases, and the idea that program costs increase as the projects move from investigation to remedial action. These sources also provide information on how authority and responsibility for conducting the IRP program were established and delegated which can help contracting officers set proper priorities for their organizations. The training materials help describe how environmental legislation has been implemented in regulations {36:1}.

Organizing. Unfortunately, little information is yet available to help plan the internal organization of the contracting office to better deal with IRP contracts. At least one organization {Case 6} has demonstrated that assigning all CE and EM support to a single contracting branch can be very effective.

A wealth of documents describe the way technical responsibility for the program is vested and what this responsibility consists of. Some of the most detailed sources are the HQ USAF/CEEV guides {34:1}. Contracting officers must be aware of how the technical office functions, at least in broad terms, in order to ensure that all their interfacing responsibilities are carried out.

Contracting officers also need to be aware that coordination of planning between the CO and CE (or EM) can be enhanced through CO representation on the base

Environmental Protection Committee (EPC). AFR 19-8 requires an EPC at each installation, and Paragraph 2.c. requires both contracting and CE (or EM) membership on this committee {33:2}.

Education. It does not appear that contracting officers are being formally notified yet that environmental remediation contracting training is becoming available {Case 6}. Several sources of education were identified, including technical training {39:2}, Professional Continuing Education courses {35:2} and formal graduate studies {35:2}. There are also numerous educational publications, including guides from AFLMC {35:1} and the EPA {40:3}.

Acquisition Planning. Contracting officers have fairly thorough guidance on IRP acquisition planning {30:3; 31:2}. Since the IRP program is in its infancy, pricing information is in short supply. Still, there are at least a few sources {31:3; 38:2,3; 40:3}. Several sources indicate that allowances for contingencies may be greater and cost/schedule slips more common than in normal construction contracts because of added technical and legal risks {39:1; 44:1; 45:1; 46:1,2; 47:1}.

Funding questions for IRP are primarily worked by the technical office, but the CO is involved in funding questions during acquisition planning {Case 6}. Contracting officers at the installation level must document the justification for using other than DoD resources in a

determination and findings (D&F) prior to submitting a MIPR for funding {30:3}.

Transitions between the phases of an IRP project are important considerations for IRP because of the complex phasing of IRP projects and the ways this affects the application of labor laws {30:2}. Program integration assistance is available through at least two methods: the use of service agencies {36:1} or the use of design-build contracting {30:3}.

Contracting Methods & Types. Other agencies have awarded significant amounts of cost-type contracts to indemnify contractors for the additional risks of IRP contracting and subsequently had trouble controlling costs {39:1}. However, several have demonstrated that these problems can be overcome through the use of special contracting methods {36:1}.

The Air Force is helping pioneer the use of fixed-price task orders on preplaced IDIQ contracts for Remedial Action {Case 6}.

Socioeconomic Programs. Contracting officers may need to review the EPA listing (40 CFR Part 15) of facilities who are violators of the Clean Air Act or Clean Water Act to ensure they do not enter into, renew, or extend contracts with contractors convicted of violations, even on contracts of less than \$100,000, and FAR Subpart 23.3 includes a requirement to insert the clause at 52.223-3

under conditions that apply to most IRP contracts. This Subpart is supplemented by DoD {30:4}.

The IRP contracting business can have significant barriers to entry as compared to other types of contracting. Higher requirements for investment in capital equipment and technical knowledge (human capital) can make it difficult to meet what would otherwise be considered normal small business targets {Case 6}.

CERCLA and SARA requirements do not apply in general to overseas pollution problems, but the CO is responsible for complying with local requirements {33:2}.

General Requirements. Bonding is generally available to contractors, except that there is some feeling that the cost and availability of performance bonds for remedial action may sometimes be prohibitive and limit the number of offerors {38:3}. Penalties for environmental noncompliance are generally unallowable {30:3}.

Special Categories. IRP projects often consist of tasks which involve R&D {47:1}. DERA funds are independent of color-of-money considerations (limits on spending outside the appropriations category) {25:1}. IRP tasks are often of an indeterminate nature with respect to the definitions of A-E, service, and construction {34:1}. Recent changes to the FAR and DFARS deal with this issue {30:2}. The FAR Uniform Contract Format is optional for use on construction contracts, because of the existence of industry standard contract and specification formats {30:3}. Department of

Labor memoranda help clarify the FAR 22.402 treatment of "construction . . . incidental to the furnishing of . . . services" {38:3}. The Service Agency briefings {36:1} include descriptions of their applications of special contracting methods.

Contract Management. Cost-type IRP contracts are prone to overrun because of technical and administrative unknowns (demanding early consideration of contract administration resources), and site conditions are prone to change during performance {34:1}.

Sources of Information. There is fairly extensive literature available describing Air Force environmental contracting problems and giving suggestions for improvements. These sources were compiled directly into a list in the Handbook, Appendix D.

Conclusions. By confirming the problem statement, this study concluded that there is no adequate source of written guidance for Air Force contracting officers involved in environmental restoration contracting. The study produced a guide written in a form which can be extracted as a stand-alone document.

Usefulness. The guide will be primarily useful to beginning to mid-level operational contracting officers. This guide will also serve as a course handout for the AFIT Environmental Contracting for Engineers Course (ENVR 524) and as supplemental material for the USAF IRP Course (AFIT

ENV 021). The study can be used to help review deliverable documentation from the HQ USAF/CEEV contracts for production of guides for technical personnel.

Recommendations. USAF should begin a larger-scale study which will go into more depth using this guide and the deliverables from HQ USAF/CEEV contract studies, ensure this guide is distributed to BCOs, and keep it updated as experience is gained and new legislation is passed. BCOs and base EM offices experienced in remediation work should be solicited for suggestions on how to improve the guide by applying their experience. A system should be developed to make training available to contracting officers involved in remediation work. For example, IRP course attendance could be required. In addition to this, there should be a system to educate contract administrators involved in IRP, including those in the Defense Logistics Agency as well as those in base Civil Engineering.

A central database should be created to allow for the analysis of IRP project contract data (not just technical information).

Lastly, the wording of the FAR guidance on design-build contracting needs clarification. As written, it discourages the use of design-build construction even when it is in the best interest of the government.

Suggestions for Further Study. Follow-on research should include statistical analysis of the effect which bonding

requirements, reimbursement method, warranties, and award fees have on contract competition and cost/schedule performance. There appears to be a need for model acquisition plans, contracts, SOWs, and award fee plans for IRP. Guidance published in the FAR and by the services needs revision to expand the use of nontraditional contract types. There is a clear need for detailed guidance on what constitutes professional A-E services, incidental construction, and how and under what circumstances engineering design and construction can be mixed on a single contract. Lastly, a follow-on study is needed in post-award contract management in the IRP: contract administration, modifications, and quality assurance.

Appendix A: Interview Questions

EXPLORATION QUESTIONS

1. Do you know of any current operating problems in the field of defense contract management?
2. Are there problems dealing with contracting for construction or otherwise dealing with the earth sciences (for example, geology, geophysics, or civil engineering)?
3. Can you tell me what Air Force organizations deal with these areas?
4. Do the people working in these areas have access to specific written guidance, or do they depend on what they can glean from publications?
5. Is there any training?
6. Do you know of any specific organizations or problems in the local area (where thesis data might be available)?
7. Do you know of any other specific research needs in these fields?
8. Do you know of any specific guidance literature for IRP contracting?
9. Are there guides available for other areas of government contract management? Are they useful?

CASE 1-5 QUESTIONS

<u>Interview Question</u>	<u>Investigative Question</u>
1. What are some of the current operating problems in environmental contract management?	(none)
2. Are there problems peculiar to IRP contracting?	1
3. Can you describe the Air Force organizations that deal with these areas?	(none)
4. Do you know of any literature on IRP contracting?	2
5. Does the guidance available from this literature fulfill your operational needs?	2
6. Do you know of any comprehensive guide?	3
7. If such a guide existed, would it be used?	4

CASE 6 QUESTIONS
(Operational Contracting Division Chief)

1. What are the responsibilities of your position with respect to environmental remediation contracting?
2. How do you organize for environmental contracting?
3. What are some of the current operating problems in environmental contract management?
4. Are there problems peculiar to IRP contracting?
5. What things are taking up most of your time now?
6. Any suggestions for others doing remedial action contracting?

CASE 6 QUESTIONS
(Operational Contracting Officer)

<u>Interview Question</u>	<u>Investigative Question</u>
1. What exactly is your position? Do you have an org chart?	(none)
2. What are the responsibilities of your position with respect to environmental remediation contracting?	(none)
3. Is this the right way to organize for environmental contracting?	(none)
4. Is it good that all CE and EM support is done by your branch?	(none)
5. What are some of your current operating problems in environmental contract management?	(none)
6. Are there problems peculiar to IRP contracting?	1
7. Do you know of any literature on IRP contracting?	2
8. Does the guidance available from this literature fulfill your operational needs?	2
9. Do you know of any comprehensive guide?	3
10. If such a guide existed, would it be used?	4
11. What things are taking up most of your time now?	(none)

12. How do you go about getting pricing information?
What sources are there? (none)
13. Do your people get any environmental education? (none)
14. What is the system for pre-coordination of
acquisition planning? (none)
15. Do you do any written acquisition plans? (none)
16. Do you participate in the base EPC (AFR 19-8)? (none)
17. Use Should-Cost? (none)
18. Who does funding requests for DERA money? (none)
19. Are you aware that design-build is possible if
justified? (none)
20. Any cost-type contracts? If so, are there
sufficient contract administration resources? (none)
21. How do you get the sources on your bidders' lists? (none)
22. Do you think that advertising in other than the
CBD (trade journals, professional journals, etc)
might net some new sources? (none)
23. Do you always debrief all unsuccessful offerors? (none)
24. Any suggestions for others doing remedial action
(IRP) contracting? (none)

Appendix B: Structure of the Federal Acquisition Regulation

SUBCHAPTER A - GENERAL

- PART 1 - FEDERAL ACQUISITION REGULATION SYSTEM
- PART 2 - DEFINITION OF WORDS AND TERMS
- PART 3 - IMPROPER BUSINESS PRACTICES AND PERSONAL CONFLICTS
OF INTEREST
- PART 4 - ADMINISTRATIVE MANNERS

SUBCHAPTER B - COMPETITION AND ACQUISITION PLANNING

- PART 5 - PUBLICIZING CONTRACT ACTIONS
- PART 6 - COMPETITION REQUIREMENTS
- PART 7 - ACQUISITION PLANNING
- PART 8 - REQUIRED SOURCES OF SUPPLIES AND SERVICES
- PART 9 - CONTRACTOR QUALIFICATIONS
- PART 10 - SPECIFICATIONS, STANDARDS, AND OTHER PURCHASE
DESCRIPTIONS
- PART 11 - ACQUISITION AND DISTRIBUTION OF COMMERCIAL
PRODUCTS
- PART 12 - CONTRACT DELIVERY OR PERFORMANCE

SUBCHAPTER C - CONTRACTING METHODS AND CONTRACT TYPES

- PART 13 - SMALL PURCHASE AND OTHER SIMPLIFIED PURCHASE
PROCEDURES
- PART 14 - SEALED BIDDING
- PART 15 - CONTRACTING BY NEGOTIATION
- PART 16 - TYPES OF CONTRACTS
- PART 17 - SPECIAL CONTRACTING METHODS
- PART 18 - (RESERVED)

SUBCHAPTER D - SOCIOECONOMIC PROGRAMS

- PART 19 - SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS
CONCERNS
- PART 20 - LABOR SURPLUS AREA CONCERNS
- PART 21 - (RESERVED)
- PART 22 - APPLICATION OF LABOR LAWS TO GOVERNMENT
ACQUISITIONS
- PART 23 - ENVIRONMENT, CONSERVATION, AND OCCUPATIONAL SAFETY
- PART 24 - PROTECTION OF PRIVACY AND FREEDOM OF INFORMATION
- PART 25 - FOREIGN ACQUISITION
- PART 26 - (RESERVED)

SUBCHAPTER E - GENERAL CONTRACTING REQUIREMENTS

- PART 27 - PATENTS, DATA, AND COPYRIGHTS**
- PART 28 - BONDS AND INSURANCE**
- PART 29 - TAXES**
- PART 30 - COST ACCOUNTING STANDARDS**
- PART 31 - CONTRACT COST PRINCIPLES AND PROCEDURES**
- PART 32 - CONTRACT FINANCING**
- PART 33 - PROTESTS, DISPUTES, AND APPEALS**

SUBCHAPTER F - SPECIAL CATEGORIES OF CONTRACTING

- PART 34 - MAJOR SYSTEM ACQUISITION**
- PART 35 - RESEARCH AND DEVELOPMENT CONTRACTING**
- PART 36 - CONSTRUCTION AND ARCHITECT-ENGINEER CONTRACTS**
- PART 37 - SERVICE CONTRACTING**
- PART 38 - FEDERAL SUPPLY SCHEDULE CONTRACTING**
- PART 39 - MANAGEMENT, ACQUISITION, AND USE OF INFORMATION
RESOURCES**
- PART 40 - (RESERVED)**
- PART 41 - (RESERVED)**

SUBCHAPTER G - CONTRACT MANAGEMENT

- PART 42 - CONTRACT ADMINISTRATION**
- PART 43 - CONTRACT MODIFICATIONS**
- PART 44 - SUBCONTRACTING POLICIES AND PROCEDURES**
- PART 45 - GOVERNMENT PROPERTY**
- PART 46 - QUALITY ASSURANCE**
- PART 47 - TRANSPORTATION**
- PART 48 - VALUE ENGINEERING**
- PART 49 - TERMINATION OF CONTRACTS**
- PART 50 - EXTRAORDINARY CONTRACTUAL ACTIONS**
- PART 51 - USE OF GOVERNMENT RESOURCES BY CONTRACTORS**

SUBCHAPTER H - CLAUSES AND FORMS

- PART 52 - SOLICITATION PROVISIONS AND CONTRACT CLAUSES**
- PART 53 - FORMS**
- PART 70 - ACQUISITION OF COMPUTER RESOURCES**

HSD IRP SERVICE CENTER

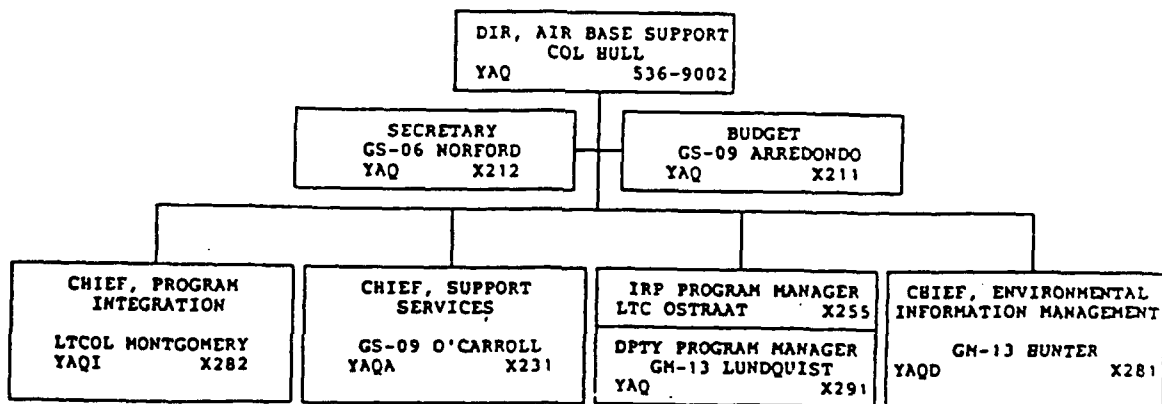
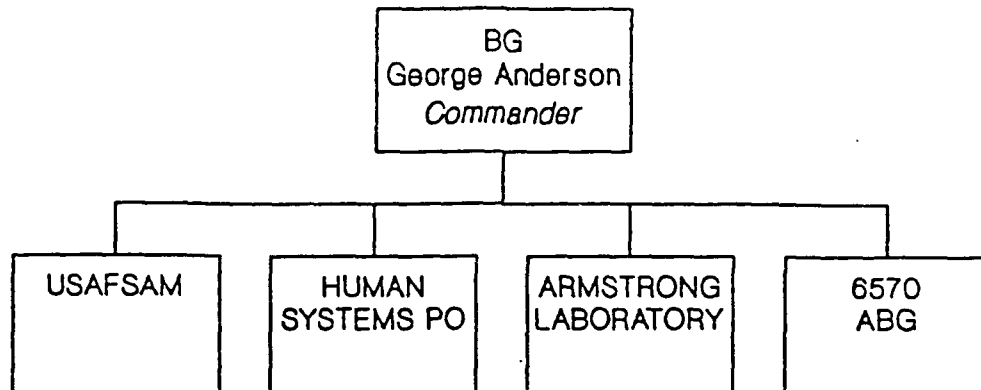
CAPABILITIES AND UNIQUE FEATURES

COLONEL WARREN R. HULL
HUMAN SYSTEMS DIVISION (HSD/YAQ)
BROOKS AFB, TX

OVERVIEW

- Organization
- Capabilities
- Contract Vehicles
- Unique Features

HUMAN SYSTEMS DIVISION (AFSC)



AIR BASE SUPPORT DIRECTORATE
JANUARY 1991

COMMERCIAL: (512) 536-9001, Ext
DSN: 240-9001, Ext
TOLL-FREE: 1-800-821-4528

HSD's RI/FS CAPABILITIES

- **Probably HSD's Strongest Technical Area of Expertise**
- **Now Doing Approximately 1/3 of Total USAF Investigative Work**
- **Can Continue Current Studies to Completion, But...**
 - **Limited Ability to Start New Work**
 - **Capacity Limited by Onboard Staff & LEEV Infrastructure Funding**

RA CAPABILITIES

- **Contract Vehicle Available**
- **HSD Doing Interim Remedial Actions**
 - **Only As Adjunct to RI/FS**
 - **Most Are Removal Actions**
 - **No Heavy Construction**
- **HSD Not Staffed with Adequate Onboard Construction Management Expertise To Support Extensive RA**

RI/FS BRIDGE TO RD/RA (HSD PERSPECTIVE)

- **Potential Problems with Transition From RI/FS to RD/RA**
- **Design Contractor Not Usually Familiar With Problem Unless He's Done RI/FS**
 - **Refuses to Accept Liability Unless He Gathers His Own Data (Re-Studies It)**
 - **Almost Assured Adverse Cost/Schedule Impact**
- **Same Contractor Probably Should Not Do Both Design And Construction: Potential Conflict of Interest (Real or Perceived)**

RI/FS BRIDGE TO RD/RA

- **Some HSD Projects Successfully Bridging Gap From RI/FS to RD/RA:**
 - **10% Design of Most Likely Fix Specified in RI/FS SOW**
 - **After Selection of Fix, HSD Contractor Produces Full Design**
 - **Separate Contractor Performs Remedial Action Construction**
 - **HSD Design Contractor Retained For Title II A&E Services**
- **Working Well Now on Some Projects**

PRIMARY CONTRACT VEHICLES

- Multiple Indefinite Delivery, Time & Materials
 - Prenegotiated Rates
 - 60-90 Days to Obligation
 - No Dollar Limit on Tasks
 - Post Award Competition Assures Responsiveness
- Ten New Contracts Awarded May 1990
 - \$50 Million Ceiling Each
 - Five Year Performance Period
 - > \$450 Million Available Ceiling Now
- Contracting Office Now at Brooks AFB

CONTRACT EMERGENCY CLAUSE

- Verbal Contract Authority
- Contractor Must Respond Within 8 Hours
- Used for Serious Health/Environmental Threats
- High Success Rate So Far, But Must Be Careful Not to Abuse Authority

PRIMARY CONTRACT VEHICLES (CONT)

1990 Contract Awardees:

**Earth Technology Corp
Engineering-Science
ICF-Kaiser Engineers
Jacobs Engineering Group
Law Environmental
NUS Corp
O'Brien & Gere Engineers, Inc
Radian Corp
Tetra Tech
Roy F. Weston Inc**

QA/QC CONTRACTOR

- **Mitre Corp, Civil Systems (McLean, Va)**
 - **Conflict Free Onsite Contractor**
 - **Extensive Environmental Experience**
- **Evaluation of Contractor Products**
- **Overall Program Evaluations**
- **Litigation Support**
- **Available to Assist MAJCOMs**

HSD's IRP TEAM

(Some Unique Qualities)

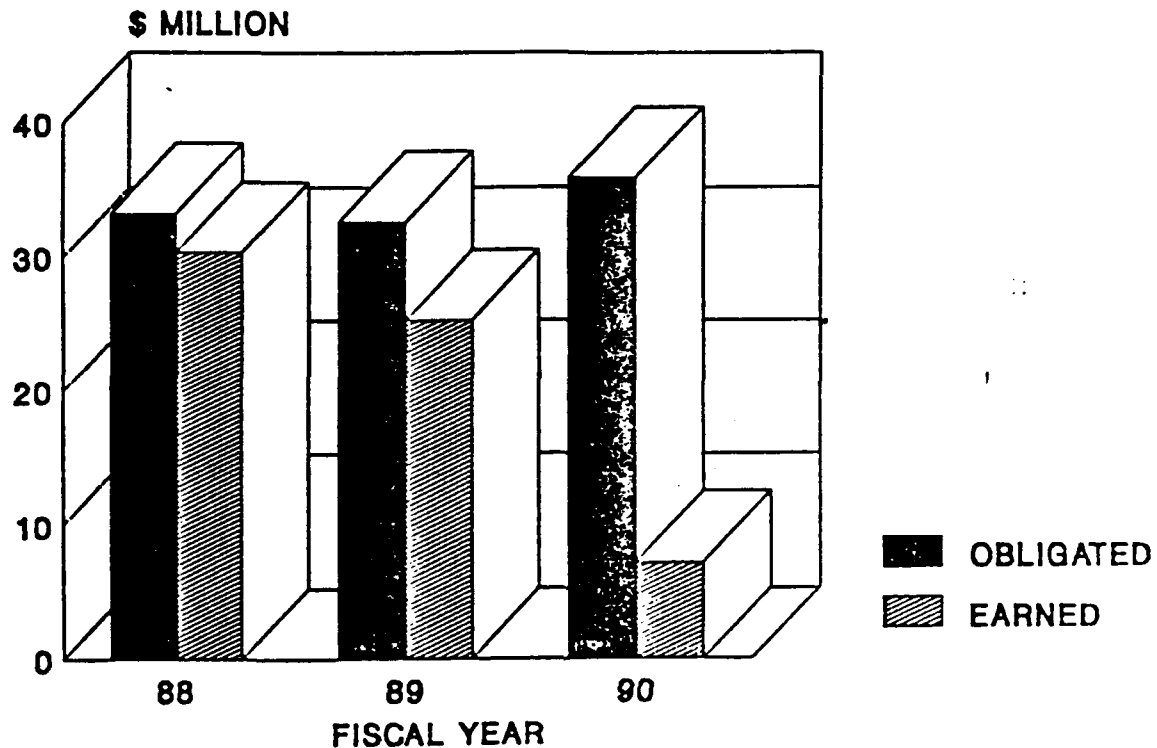
- **Exceptional Academic Credentials**
- **Diverse Skill Mix**
 - Environmental Engineering**
 - Hydrology**
 - Environmental Chemistry**
 - Industrial Hygiene/Toxicology**
 - Contract Management**

HSD's UNIQUE CAPABILITIES

- **Continuing Technical Support, i.e.,
We Don't Go Away When Contract Ends**
- **Program Management Assistance (Mitre)**
- **Litigation Support to Include Expert
Testimony & Technical Analysis**
- **High Expenditure Rates, i.e., Money
Is At Work Soon After Obligation**

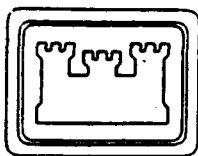
HSD IRP PROGRAM OFFICE

CUSTOMER DOLLARS



SUMMARY

- HSD Service Center a Proven Asset
- Strong Technical Capabilities
- Unique Among Other Sources
- Trying Innovative Approaches to Respond to Customers Needs



U. S. Army
Corps of Engineers



USACE Environmental Restoration Support Capabilities

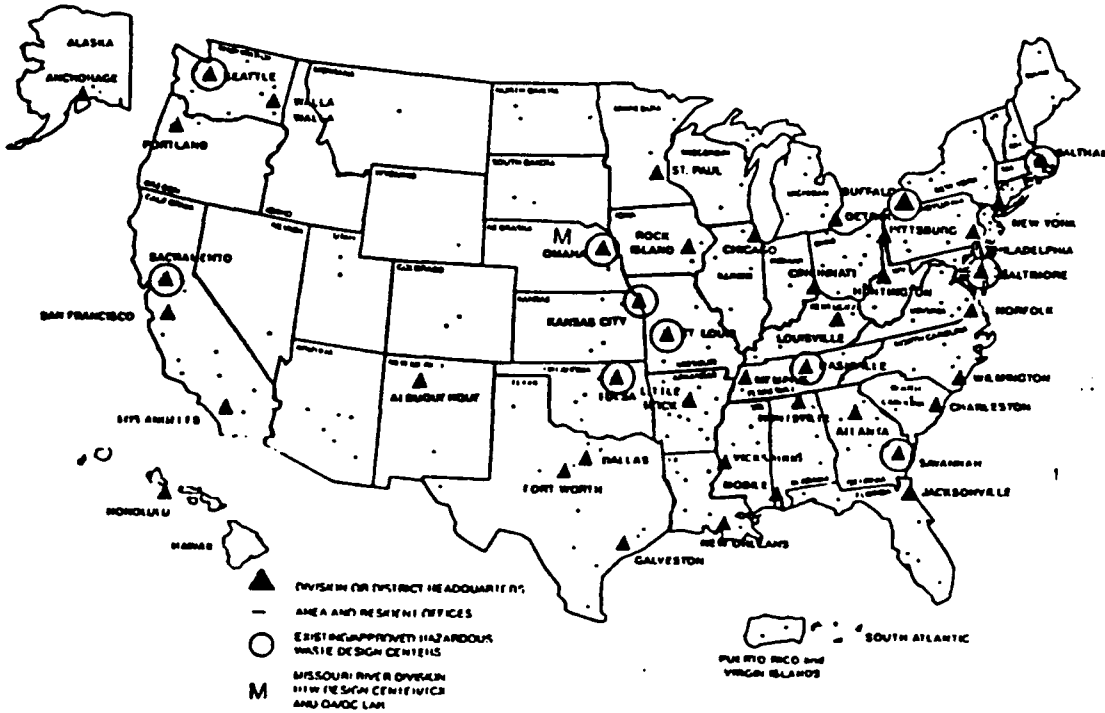
USAF School of Engineering and Services Installation Restoration Course

**Presented by: Sherman Bollinger
Air Force Program Manager
(402) 221-7497**

Corps HTW Background

- Original IAG with EPA - February 1982
- Initiated CEMRD Superfund Support
- Missouri River Division Designated USACE
HTW Design Center - March 1982
- Corps Management & Execution Role in FUDS
- FY 84
- Corps Management & Execution Role in Army
IRP - FY 86
- Omaha District Execution of TAC IRP - FY 86

USACE Presence

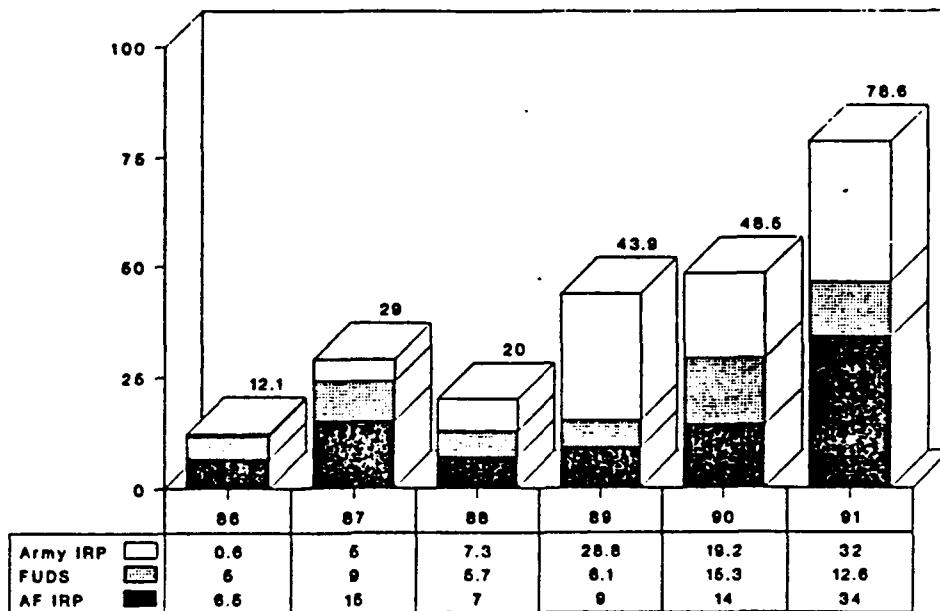


Environmental Restoration Program Dollars in Millions

	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>
DERP						
FUDS	37	28	41	61	88	140
IRP	140	153	204	177	287	321
DSMOA/CA	-	-	-	9	20	20
BRAC	-	-	4	21	23	65
Other DOD	20	18	27	30	88	106
Superfund	40	72	130	190	200	200
DOE	-	-	-	2	19	22
TOTAL	237	271	406	409	725	874

USACE DERP Remedial Design Workload *

(Dollars in Millions)

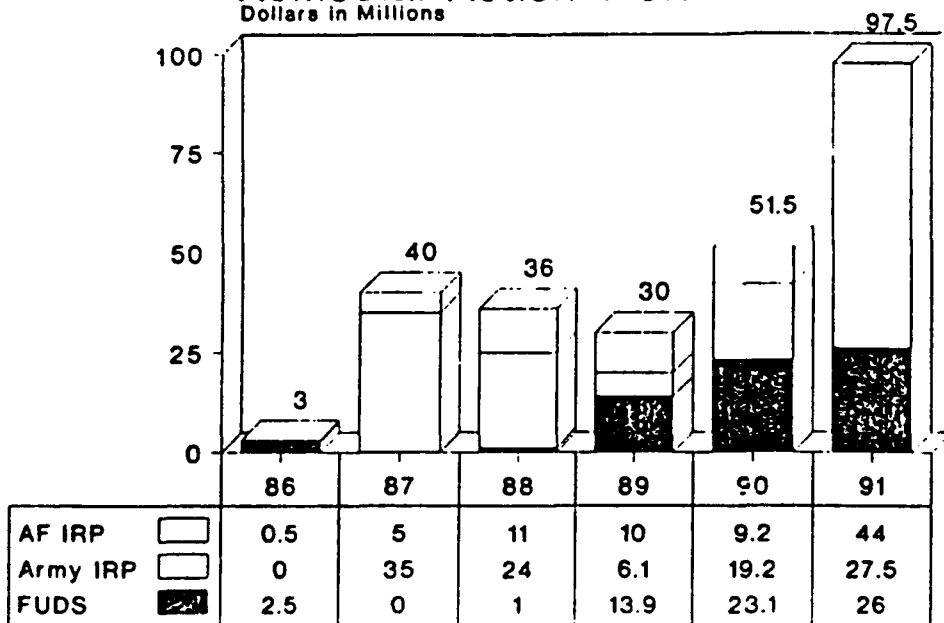


*Excludes CETHA

Projected

USACE DERP Remedial Action Workload

Dollars in Millions



Fiscal Year

Projected

February 1991

Benefits of Conducting DERP and Superfund Programs

- Similar Remediation Technologies for
DERP and Superfund
- Identical Regulatory Requirements for
DERP and Superfund
- Integrated Managerial and Technical
Expertise and Capabilities
- Cost Savings and Efficiency Enhancement

Execution Philosophy Studies and Design

Assign Central Point of Contact for
Each Air Force Command

<u>AF Command</u>	<u>POC</u>	<u>Exe Agt</u>
TAC	Missouri River Division	Omaha District
ATC	Southwestern Division	Tulsa District
AFLC AFSC SAC MAC	As agreed between USACE and AF Command	

Execution Philosophy Studies and Design (Cont'd)

- Decentralize Execution by Designated HTW Design District
 - In-House Design (10-15%)
 - Indefinite Delivery Contracts
 - ✓ Fixed Price
 - ✓ Cost Plus
 - Site Specific if Schedule Permits
 - Use Same AE on RI/FS thru RD if Possible
 - Use One PM per Base for Continuity

Execution Philosophy Remedial Action

- Decentralized to Local Construction District
- Use On-Site Corps Resident Offices
- Contracting Strategy
 - Invitation for Bid (Fixed Price)
 - Request for Proposal (Fixed Price or Cost Plus)
 - Preplaced Remedial Action (Fixed Price or Cost Plus)
 - Rapid Response
 - Immediate Response (Being Developed)

Obligations vs Expenditures

	<u>\$ Obligated</u>	<u>\$ Expensed</u>
AE Services	Contract Award	As Work is Performed
Laboratory	Funds Transmitted	As Work is Performed
In-House Services	As Work is Performed	As Work is Performed
Construction	Contract Award	As Work is Performed

Air Force - USACE HTW MOUs

- Tactical Air Command (TAC) (7 July 1989)
- Systems Command (AFSC) (3 March 1989)
- Strategic Air Command (SAC) (18 May 1990)
- Military Airlift Command (MAC) (11 June 1990)
- Air Training Command (ATC) (25 June 1990)
- Logistics Command (AFLC)
 - Hill AFB (4 January 1989)
 - Wright Patterson AFB (Rapid Response, 13 June 1989)
 - Kelly AFB (Rapid Response, 30 October 1990)

Procedures to Reduce Cost and Accelerate Schedules

- **Design**
 - Indefinite Delivery A/E Service Contracts
 - Independent Government Oversight & Tech Review
 - ✓ Establishes Government Accountability for Costs and Technical Decisions
 - ✓ Allows for Immediate Responsiveness
 - ✓ Reduces Administrative Costs
 - Assume Acceptable Risks through Aggressive Project Management
 - ✓ Scope Next Phase when Draft Document Complete
 - ✓ Scope Projects Below Funding Line
 - ✓ Straddle Advertising
 - In-House Capability
 - ✓ Design/Laboratory Facilities/Field Investigation

Procedures to Reduce Cost and Accelerate Schedules (cont'd)

- **Remedial Action**
 - Pre-placed Remedial Action Contracts
 - Immediate Response Contracts (Being Developed)
 - Rapid Response Contracts
 - Independent Government Field Oversight
 - Straddle Advertising When Justified

Technical Capabilities

USACE Network of Technical Experts

Industrial Hygienists

Chemists

Value Engineers

Chemical Engineers

Environmental Engineers

Cost Engineers

Real Estate Experts

Attorneys

**Civil Engineers (with
Various Specialties)**

Geotechnical Engineers

Geologists

Interdisciplinary Specialists

Innovative Technology Advocates

Environmental Regulation Specialists

Health Scientists

Technical Capabilities (cont'd)

- **MRD Design Center Provides Tech Review and Assistance Throughout USACE**
- **Continual Development of Engineering Regulations and Manuals**
- **Eight Corps Laboratories with Environmental Capabilities**
- **Established Working Relationship with EPA and Other Regulatory Agencies**
- **Broad Experience in Investigative and Treatment Technologies**

Breakdown of Fees

- **Studies and Designs (Cost Reimbursable)**
 - Oversight of AE Service Contracts
 - ✓ PA/SI, RI/FS -- 10-15% of AE Contract Cost
 - ✓ Remedial Design -- 15-20% of AE Contract Cost
- **Remedial Action**
 - S&A of Remedial Action Contract -- 8%

Command and Base Involvement Reporting

- **Reporting Procedures**
 - AE and In House Progress Reports
 - Periodic Fact Sheets
 - AMPRS
- **Quarterly Line Item Reviews**
 - By Command
 - Hosted by POC/Division
 - Team Review
- **Document Review Meetings**
 - Usually at Base
 - Includes Base/Command/USACE/Regulators/AE
 - Automated Review & Management System (ARMS)

Preplaced Contracts - Design Indefinite Delivery AE Service Contracts

- Missouri River Division
 - 6 \$9M \$3M/yr \$1M/Work Order 2-1yr Options
 - 6 \$20M No Ann Limit No Work Order Limit 2-1yr Options
- Ohio River Division
 - 1 \$8M \$2M/yr \$1M/Work Order
- Southwestern Division
 - 3 \$5M/yr \$1M/Work Order 2-1yr Options
 - 2 \$5M/yr \$0.5M/Work Order 2-1yr Options
- North Pacific Division
 - 1 \$1M No Work Order Limit
- South Atlantic Division
 - 2 \$2M/yr 0.5M/Work Order 2-1yr Options
 - 1 \$5M/yr 0.9M/Work Order 1-1yr Option

Preplaced Contracts Remedial Action

Missouri River Division

Preplaced Remedial Action

7 \$50M, No Annual Limit, No Work Order Limit

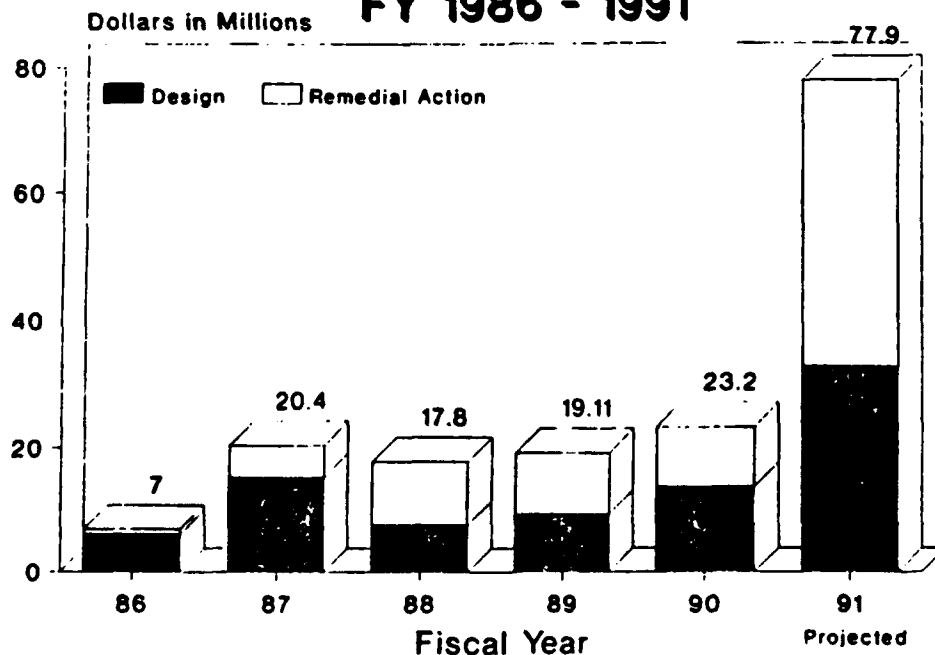
Rapid Response

2 \$50M, No Annual Limit, No Work Order Limit

Start Up Time

- Design
 - In-House Effort -- 1-2 Weeks
 - AE Services (Indef Del Cont) -- 4-10 Weeks
 - AE Services (Site Specific) -- 4-6 Months
- Remedial Action Contracting
 - Rapid Response -- 30-45 Days
 - Immediate Response -- Onsite in 3 Days
 - Preplaced Remedial Action -- 45-60 Days
After Design Complete (Immediate Letter
Contracts when Justified)
 - Invitation for Bid -- 120 Days
 - Request for Proposal -- 90-120 Days
After RFP Developed

USACE Air Force IRP Workload FY 1986 - 1991



TAC/Corps Team Performance FY 90 Program Execution

- Funds Received -- 20.4M
- Funds Obligated - 100%
- TAC Site Closeout -- 26%
 - AF Goal -- 20%
 - AF Average -- 11%
- AF Sites Closed
 - Total AF -- 399
 - TAC -- 176 (44%)

Why Utilize the Corps as HTW Service Agency

- Full Service Support Organization
 - Engineering
 - Contracting
 - Legal
 - Construction
 - Project Management
 - Regulatory Interface
- Proven Performance of Existing and Past Programs
- Committed to Closing Sites
- Experienced In House Management & Tech HTW Staff
- In-place Construction Organization
- Rapid and Immediate Response Capability
- Accountability to Customer

For Further Information

U.S. Army Corps of Engineers
Missouri River Division
HTW Division
P.O. Box 103, Downtown Station
Omaha, NE 68101-0103

Phone: (402) 221-7497



U. S. Army
Corps of Engineers



USACE
Environmental Restoration
Support Capabilities

HAZWRAP

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM

SUPPORT TO THE AIR FORCE DEFENSE ENVIRONMENTAL RESTORATION PROGRAM



JUNE 1991



HAZWRAP

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM

MISSION

The mission of the Hazardous Waste Remedial Actions Program (HAZWRAP) is to develop, promote, and apply innovative and cost-effective hazardous waste management and environmental technologies to help resolve national problems and concerns.

- HAZWRAP seeks to serve as integrator for hazardous wastes and materials management across the federal government.
- It applies the unique combination of research and development (R&D) capabilities, technologies, expertise, and facilities in the Martin Marietta Energy Systems, Inc. (Energy Systems) complex to address problems of national importance.

STRATEGIC OBJECTIVE

- **SUPPORT OAK RIDGE OPERATIONS OFFICE IN BECOMING THE UNQUESTIONED NATIONAL LEADER IN HAZARDOUS WASTE MANAGEMENT AND ENVIRONMENTAL RESTORATION**
 - **DEVELOP A FULL RANGE OF HAZARDOUS WASTE REMEDIAL ACTION AND MANAGEMENT ACTIVITIES, INCLUDING APPLIED RESEARCH, STRATEGIC PLANNING, AND APPLICATIONS**
 - **BECOME THE FEDERAL AGENCY FOCUS FOR HAZARDOUS WASTE-RELATED HEALTH AND ENVIRONMENTAL RISK MANAGEMENT, POLLUTION PREVENTION, AND ENVIRONMENTAL COMPLIANCE**
 - **TRANSFER WASTE-RELATED TECHNOLOGY FROM FEDERAL AGENCIES, ACADEMIA, AND THE PRIVATE SECTOR TO SUPPORT OAK RIDGE OPERATIONS OFFICE**

RAP PROGRAM: DESCRIPTION OF ACTIVITIES

- **HAZWRAP CONDUCTS PROJECTS FOR CHARACTERIZATION OF THE EXTENT OF CONTAMINATION AT HAZARDOUS WASTE SITES ON FEDERAL INSTALLATIONS, AND RECOMMENDS AND DESIGNS CORRECTIVE ACTIONS**
- **WORK IS PURSUANT TO CERCLA AND RCRA**
- **PROJECTS INCLUDE PRELIMINARY ASSESSMENTS, REMEDIAL INVESTIGATIONS, FEASIBILITY STUDIES, REMEDIAL DESIGN, AND RCRA FACILITY INVESTIGATIONS**
- **WORK IS BEING DONE PRIMARILY FOR DOD ALTHOUGH THE HAZWRAP CONTRACTORS ARE USED AT DOE FACILITIES**

a. HAZWRAP EXECUTION PHILOSOPHY

- **MAINTAIN A HIGH-QUALITY, CUSTOMER-DRIVEN, AND TECHNICALLY-EXCELLENT PROGRAM**
- **MAXIMIZE FLEXIBILITY, COST CONTROL, AND INCENTIVE TO PERFORM REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES**
- **MINIMIZE CONFLICT OF INTEREST, COST, AND LIABILITIES ASSOCIATED WITH REMEDIAL DESIGN AND REMEDIAL ACTIONS**
- **PROTECT THE TAXPAYERS' DOLLARS**

HAZWRAP EXECUTION PHILOSOPHY UTILIZES BENEFITS OF DIFFERENT CONTRACT TYPES

- **HAZWRAP CONDUCTS INVESTIGATIONS THROUGH REMEDIAL DESIGN USING COST PLUS FIXED FEE SUBCONTRACTS**
 - **SINGLE CONTRACTOR USED THROUGHOUT**
- **HAZWRAP WORKS WITH AIR FORCE TO FACILITATE REMEDIATION CONTRACTING USING FIXED-PRICE CONTRACTS**
 - **CONTRACTING BY BASE, MAJCOM, OR OTHER DOD AGENT**
- **HAZWRAP SUBCONTRACTOR IS MAINTAINED TO PERFORM CONSTRUCTION OVERSIGHT AND POST-REMEDIAL EVALUATION**
 - **DESIGNER PROVIDES QUALITY ASSURANCE**

ADVANTAGES OF HAZWRAP PHILOSOPHY

PRELIMINARY ASSESSMENT THROUGH DESIGN

- **CLOSE TECHNICAL REVIEW/OVERSIGHT**
- **SUBCONTRACTOR CONTINUITY**
- **INVESTIGATOR PREPARES DESIGN**
- **DESIGNER OVERSEES REMEDIATION**
- **FLEXIBILITY**

REMEDIAL ACTION

- **AIR FORCE NEEDS HIGHEST LEVEL OF CONTROL**
- **CONTRACT AWARD PRIMARILY ON PRICE**
- **DESIGNER DOES NOT CONSTRUCT**
 - **DOES NOT WRITE HIS OWN TICKET**
 - **CONFLICT OF INTEREST IS MINIMIZED**

UNCERTAINTY DICTATES CONTRACT TYPE

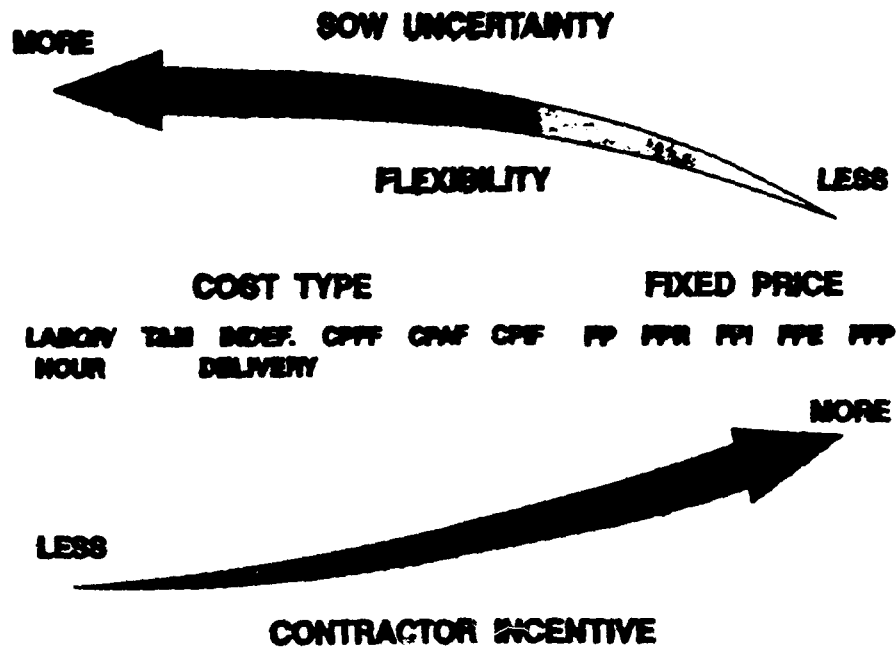
- **DURING THE STUDY PHASES OF A PROJECT**
 - **UNCERTAINTY IS HIGH**
 - **LIABILITY IS LOW**
 - **PROCESSES (REGULATIONS, PROCEDURES) DICTATE RESULTS**
 - **PROCESSES MUST BE CONTROLLED**

"NEED FLEXIBLE CONTRACT TYPE"

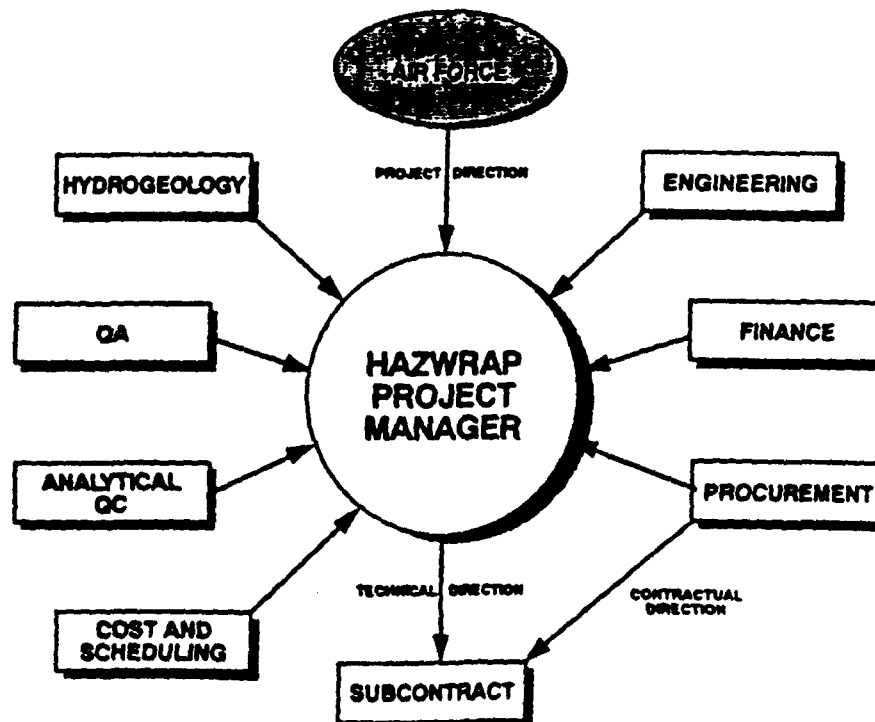
- **DURING REMEDIATION**
 - **UNCERTAINTY IS LOW**
 - **LIABILITY IS HIGH**
 - **DESIRED RESULT IS KNOWN**
 - **RESULTS DICTATE PROCESS**
 - **RESULTS MUST BE CONTROLLED**

"FIXED PRICE CONTRACT IS BETTER SUITED"

COST-PLUS-FIXED-FEE CONTRACTS BALANCE FLEXIBILITY AND INCENTIVE TO PERFORM



HAZWRAP PROJECT TEAM



d. INCENTIVES TO REDUCE COSTS AND ACCELERATE SCHEDULES

CONTRACTUAL

- **COMPLETION-TYPE SUBCONTRACTS**
- **REGIONAL SUBCONTRACTORS (SCHEDULE)**
- **PRENEGOTIATED TASK ORDERS (SCHEDULE)**
- **QUANTITY DISCOUNTS ON ANALYTICAL (COST)**
- **SMALL, DISADVANTAGED BUSINESSES (SCHEDULE)**
- **INCENTIVE FEE WHEN APPROPRIATE (SCHEDULE)**
- **LETTER SUBCONTRACTS WHEN APPROPRIATE (SCHEDULE)**

INCENTIVES TO REDUCE COSTS AND ACCELERATE SCHEDULES (Continued)

TECHNICAL

- **CERTIFICATION OF ANALYTICAL LABORATORIES (COST)
- COST SHARING WITH DOE AND NAVY**
- **GENERIC STATEMENT OF WORK - STANDARDIZED
APPROACH (SCHEDULE)**
- **STANDARD OPERATING PROCEDURES FOR
FIELDWORK (COST)**
- **FIELD SCREENING TECHNIQUES TO MINIMIZE
MOBILIZATIONS (COST/SCHEDULE)**

**HAZWRAP COST SAVINGS AND COST-AVOIDANCE
INITIATIVES HAVE OFFSET MANAGEMENT
COSTS TO THE AIR FORCE**

EXAMPLES

GENERAL

- **HAZWRAP HAS NEGOTIATED DISCOUNTED PRICES FOR QUANTITY CHEMICAL ANALYSIS SAVING \$5 MILLION PER YEAR FOR AIR FORCE DERP**
- **TASK ORDER NEGOTIATIONS HAVE REDUCED SUBCONTRACTOR PROPOSALS BY MORE THAN \$30 MILLION**

**HAZWRAP COST SAVINGS AND COST-AVOIDANCE
INITIATIVES HAVE OFFSET MANAGEMENT
COSTS TO THE AIR FORCE (Continued)**

EXAMPLES

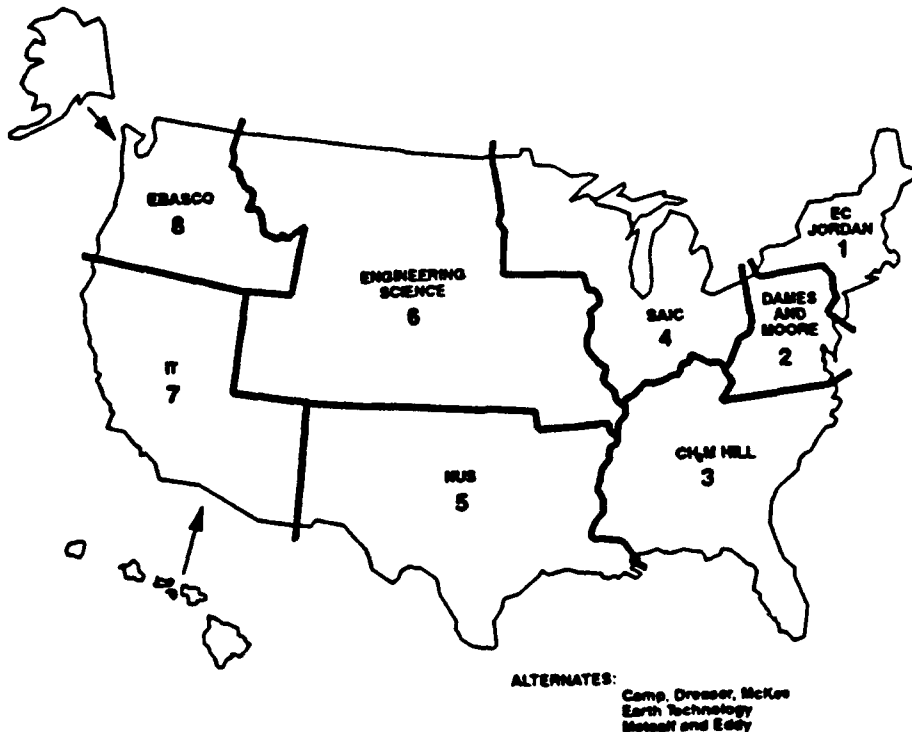
PROJECT SPECIFIC

- **REVIEW OF THE SPACECOM UST MANAGEMENT PROGRAM BY HAZWRAP RESULTED IN A REDUCTION OF \$8 MILLION IN THE ESTIMATED COST AND 3 YEARS FROM THE SCHEDULE**
- **RE-EVALUATION BY HAZWRAP OF A PROPOSED REMEDIAL ACTION AT WILLIAMS AFB LED TO SELECTION OF A MORE COST-EFFECTIVE ALTERNATIVE AND COST AVOIDANCE OF ABOUT \$3.5 MILLION**

HAZWRAP USES MULTIDISCIPLINARY PROJECT TEAMS

- | | |
|---|--|
| <ul style="list-style-type: none"> ● 50 PROJECT MANAGERS ● 5 QA/QC SPECIALISTS ● 13 CONTRACTING OFFICERS ● 4 SCHEDULING SUPPORT STAFF ● 3 COST-ESTIMATING ENGINEER ● 11 ENVIRONMENTAL SERVICES SUBCONTRACTORS ● 10 SMALL, DISADVANTAGED BUSINESSES | <ul style="list-style-type: none"> ● 25 HYDROGEOLOGISTS ● 6 ENGINEERS ● 8 CHEMISTS ● 2 RISK SPECIALISTS ● 1 ENVIRONMENTAL LAWYER ● 5 FINANCE OFFICERS ● 10 PROJECT CLERKS |
|---|--|

e. CURRENT PREPLACED CONTRACTS



HAZWRAP COST PLUS FIXED FEE - COMPLETION TYPE GENERAL ORDER SUBCONTRACTS

CONTRACTOR	START DATE	EXPIRATION DATE (1)	\$1000 CONTRACTED TO DATE	AMOUNT AVAILABLE
CAMP, DRESSER, McKEE	2/88	3/94	\$2,801	UNLIMITED
CH2M HILL	2/88	2/94	\$17,835	UNLIMITED
DAMES & MOORE	2/88	2/94	\$3,574	UNLIMITED
EARTH TECHNOLOGY	2/88	2/94	\$885	UNLIMITED
EBASCO	2/88	2/94	\$2,778	UNLIMITED
EC JORDAN (ABB)	1/88	2/94	\$38,963	UNLIMITED
ENGINEERING-SCIENCE	2/88	2/94	\$28,488	UNLIMITED
IT CORPORATION	2/88	1/94	\$51,533	UNLIMITED
METCALF & EDDY	2/88	2/94	\$2,835	UNLIMITED
NUS CORPORATION	2/88	2/94	\$2,835	UNLIMITED
SAIC	2/88	2/94	\$19,584	UNLIMITED
URS CORPORATION	3/88	3/99	\$5,154	NONE

(1) NEW WORK IS NOT CONTRACTED AFTER EXPIRATION DATE. PREVIOUSLY CONTRACTED WORK CONTINUES TO COMPLETION. RECOMPETITION WILL REPLACE THESE CONTRACTS.

HAZWRAP TEAM HAS MULTIPLE CAPABILITIES

- **SUPPORT FOR OTHER CONCERNS**
 - RCRA, CLEAN AIR, CLEAN WATER, ETC.
 - RADON AND ASBESTOS
 - WASTE MINIMIZATION
 - SOCIOECONOMIC ANALYSIS
 - RESOURCE UTILIZATION
 - ENERGY CONSERVATION
 - REGULATORY COMPLIANCE
 - BASE CLOSURE

g. BREAKDOWN OF FEES

- **DOE**
 - **CHARGES NOTHING**
 - **GAO FINDING EFFECTIVE 10/91**
- **HAZWRAP**
 - **SALARY**
 - **6 TO 19% BELOW NATIONAL AVERAGE
(SOUTHEAST U.S. COST-OF-LIVING DIFFERENTIAL)**
 - **INDIRECT COSTS INCLUDING BENEFITS AND OVERHEAD ARE 200%**
 - **NO FEE**
- **REGIONAL SUBCONTRACTORS (AVERAGE)**
 - **SALARY**
 - **AT NATIONAL AVERAGE**
 - **INDIRECT COSTS INCLUDING BENEFITS
AND OVERHEAD, ETC., OF 180%**
 - **NEGOTIATED FEES OF 6 TO 8%**

HAZWRAP MANAGEMENT COSTS

- **DECREASE WITH THE LIFE AND SIZE
OF PROJECT**
- **ARE CURRENTLY 17.7% OF TOTAL**
- **WILL BE LESS THAN 15% AT COMPLETION**
- **ARE OFFSET BY COST SAVINGS AND
COST AVOIDANCE**

J. NORMAL TIME REQUIRED TO START WORK EFFORT

ACTIVITY	EVENT	AVERAGE ELAPSED TIME (DAYS)	CUMULATIVE
FUNDING AUTHORIZATION RECEIVED		0	0
DOE REVIEW/ACCEPTANCE	WORK BEGINS	10	10
HAZWRAP DEVELOPS SOW	SOW	10	20
REQUEST FOR PROPOSAL	SUBCONTRACTOR BEGINS	3	23
PROPOSAL DEVELOPMENT	PROPOSAL	10	33
PROPOSAL REVIEW		5	38
SUBCONTRACT NEGOTIATIONS		10	48
SUBCONTRACT	CONTRACT WORK	5	53


SUMMARY

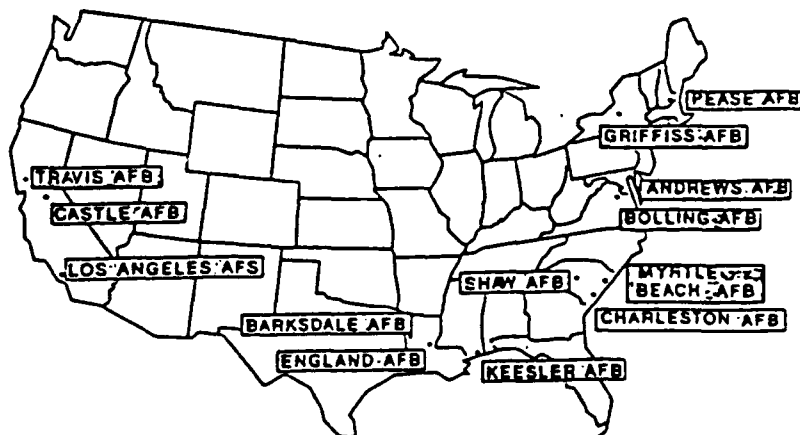
- HAZWRAP AND DOE ARE COMMITTED TO THIS WORK
- HAZWRAP'S APPROACH IS TECHNICALLY SOUND;
MAXIMIZES INCENTIVE TO PERFORM AND MINIMIZES
CONFLICT OF INTEREST
- TAXPAYER'S FUNDS ARE EFFECTIVELY MANAGED
- HAZWRAP COST CONTROLS AND INCENTIVES HAVE
OFFSET HAZWRAP MANAGEMENT COSTS
- THE HAZWRAP TEAM IS AN EFFICIENT, CUSTOMER-
DRIVEN RESOURCE FOR THE AIR FORCE

NAVAL FACILITIES ENGINEERING COMMAND

- o CAPTAIN JIM RISPOLI - ASSISTANT COMMANDER
FOR ENVIRONMENT, SAFETY AND HEALTH
- o COMMANDER CORKY KLEVEN - HEAD, FACILITIES
MANAGEMENT DEPARTMENT, SOUTHERN DIVISION
- o MR. PETE SPELL - DIRECTOR, ENVIRONMENTAL
DIVISION, SOUTHERN DIVISION

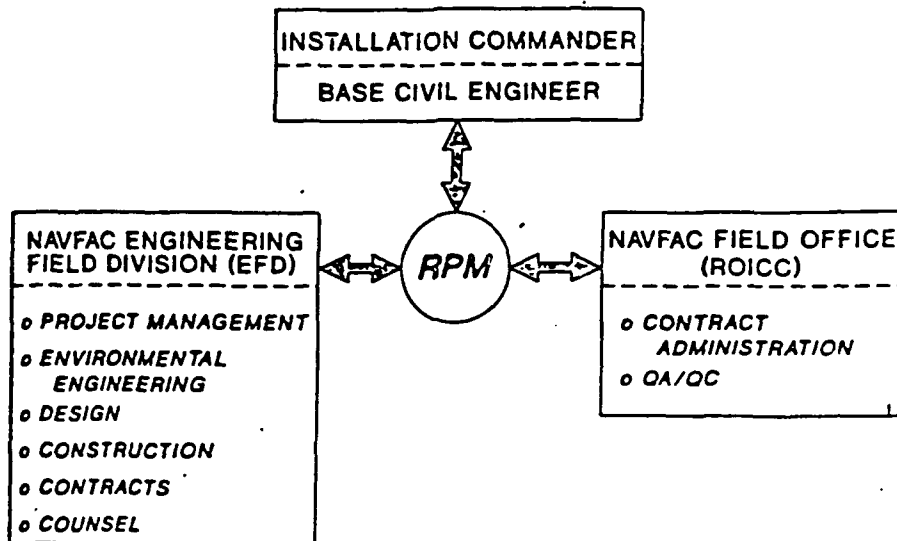
EXECUTION SERVICE AGENT

 CONSISTENCY, COMMITMENT,
AND TEAMWORK



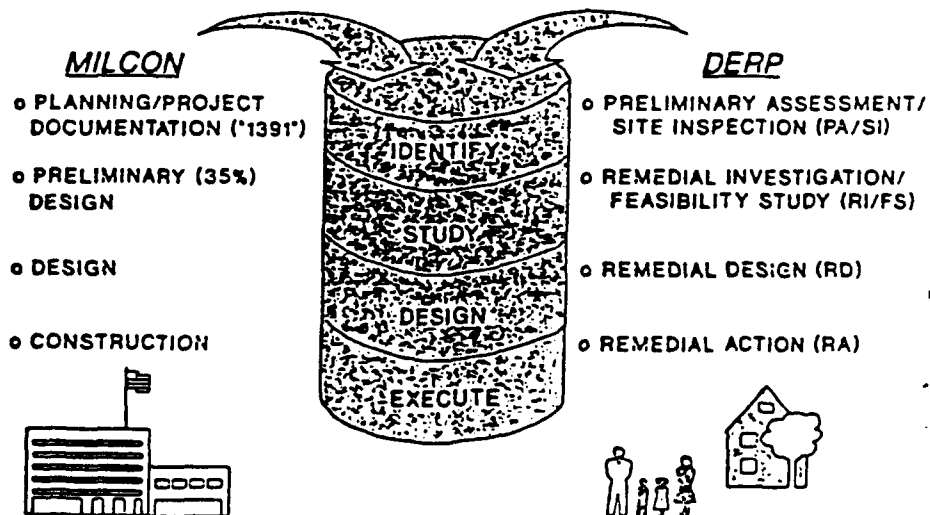
• NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)
IS CONSTRUCTION AGENT FOR 13 AIR FORCE BASES

THE EXECUTION TEAM

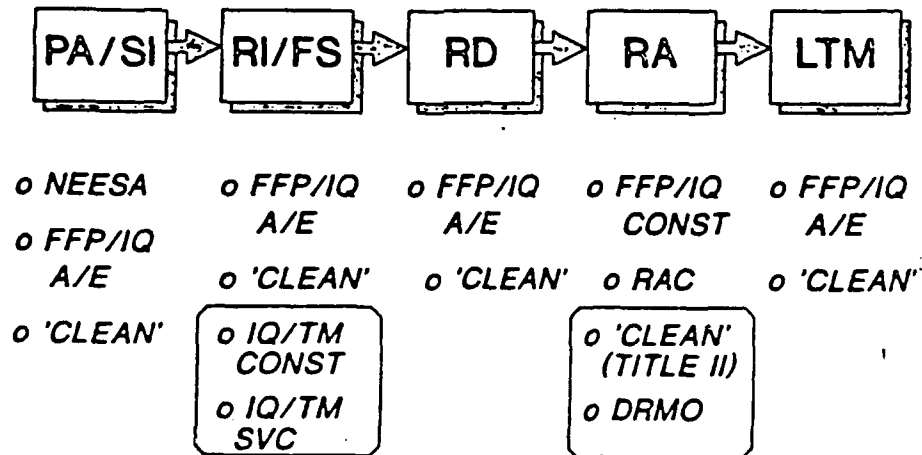


EXECUTION PHILOSOPHY

'PARALLEL TO MILCON PROGRAM EXECUTION -
THE BUSINESS WE KNOW BEST'

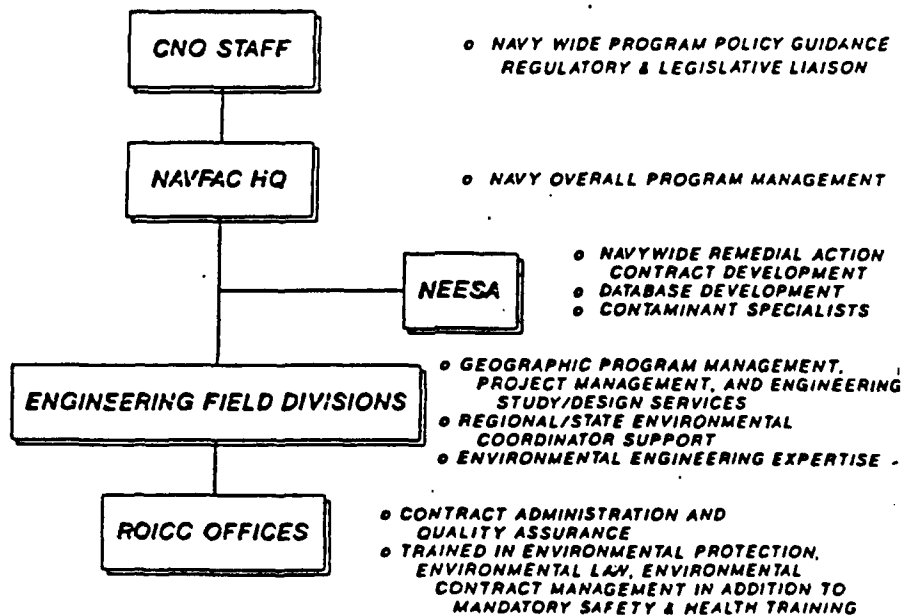


CONTRACTING METHODS



• INTERIM REMOVALS MAY OCCUR AT ANY PHASE (SEE 'RA')

TECHNICAL CAPABILITY AND SKILLS



CONTRACT CAPABILITY

R.A.C.

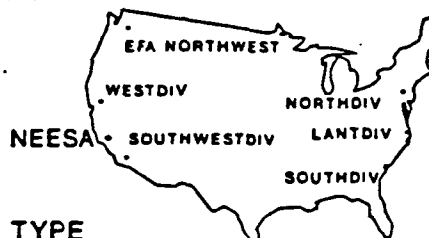
- o REMEDIAL ACTION CONTRACTS
DEVELOPED BY NAVAL ENERGY AND
ENVIRONMENTAL SUPPORT ACTIVITY

- o 5 YEAR,
COST PLUS FIXED FEE

- o TOTAL VALUE \$150M

- o 8 CONTRACTS BY CONTAMINANT TYPE
USING BEST AVAILABLE TECHNOLOGY

- | | |
|------------------------------------|----------------------|
| - WASTE PETROLEUM SITES | - ORDNANCE SITES |
| - CLEAN PETROLEUM SITES | - METALS/ACIDS/BASES |
| - COMBINED WASTE SITES (LANDFILLS) | - SOLVENTS & PAINTS |
| - PCBs | - PESTICIDES |



CONTRACT CAPABILITY

INDEFINITE DELIVERY

- o 77 CURRENTLY IN PLACE - TOTAL VALUE \$76M

CLEAN

- o COMPREHENSIVE, LONG-TERM
COST PLUS AWARD FEE

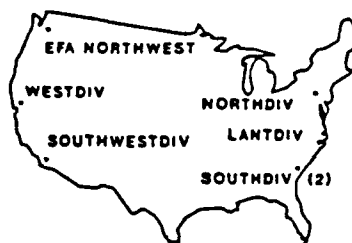
- o 7 CONTRACTS IN PLACE

- o 10 YEAR TERMS

- o TOTAL VALUE \$790M

- o ADVANTAGES:

- QUICK RESPONSE
- LONG TERM ('CRADLE TO GRAVE') WORK
- FLEXIBILITY ON UNCERTAIN SCOPES
- CONSISTENCY WITH REGULATORY AGENCIES
- INCREASED CONTRACTOR ACCOUNTABILITY



COST OF PROGRAM EXECUTION

STUDY/DESIGN/ENGINEERING SERVICES

- **CONTRACT COST PLUS 10-12%**

REMEDIAL ACTION/CONSTRUCTION

- **COST PLUS CONTRACTS - DIRECT COSTS (CONTRACT AND ACTUAL EFD IN-HOUSE EFFORT) PLUS 2% SIOH**
- **FIXED PRICE CONTRACTS - CONTRACT COST PLUS 8% SIOH**

OBLIGATING AND EXECUTING WORK

- **ANNUAL APPROPRIATION PROCEDURES - OBLIGATE ONLY PRIORITY PROJECTS WITH REALISTIC COMPLETION SCHEDULES**
- **CONTRACT DELIVERY ORDERS ON PREPLACED COST-PLUS AND INDEFINITE DELIVERY FIXED PRICE CONTRACTS ARE ISSUED, OBLIGATED, AND EXPENSED AS FINITE STATEMENT OF WORK WITH SCHEDULED DELIVERABLES**
- **CONTRACT VEHICLE/TYPE SELECTED FOR BEST AND MOST APPROPRIATE COST AND PERFORMANCE COMBINATION**
- **TYPICAL EXPENSED/OBLIGATED RATIO FOR INDEFINITE DELIVERY TYPE CONTRACTS EXCEEDS 50%**



CONSISTENCY, COMMITMENT, AND TEAMWORK

*** NAVFAC PERSONNEL WERE ON THE SCENE AS
SOON AS THE WINDS SUBSIDED . . . AND
DOING IN WEEKS AND MONTHS WHAT
NORMALLY TAKES YEARS. ***

*** . . . PROVING TEAMWORK ACHIEVES
THE ALMOST IMPOSSIBLE. ***

19 November 1990 letter from Major General Ahearn,
USAF Director of Engineering and Services, to
Rear Admiral Bottorff, Commander, Naval Facilities
Engineering Command in the aftermath of
Hurricane Hugo.

WHY NAVFAC . . .

SELECT YOUR SERVICE AGENT AT EACH INSTALLATION -

- DEVELOP PROFESSIONAL RELATIONSHIP AND
PARTNERSHIP FOR THE LONG HAUL

ESTABLISH YOUR TEAM -

- INSTALLATION REPRESENTATIVES ◦ REGULATORY LIAISON
- TECHNICAL CONSULTANTS ◦ FIELD EXECUTION AGENT

MAINTAIN 'CRADLE TO GRAVE' AGENCY -

- TRANSITION AT DISCRETE PHASE OF PROGRAM
- PROMOTE CONSISTENCY OF STUDY, DESIGN,
AND REMEDIATION OBJECTIVES

ENSURE FULL SPECTRUM OF CONTRACT TYPES AND RESPONSE CAPABILITIES -

GUARANTEE SUCCESS 'CRADLE TO GRAVE' -

- HIGH QUALITY STUDY/DESIGN EFFORTS ON TIME
- COST EFFECTIVE, SAFE REMEDIATION WORK ON SCHEDULE

. . . WE ARE A PROVEN PERFORMER - MILCON, O&M, IR



CONTRACTING OFFICER'S GUIDE
TO
ENVIRONMENTAL
RESTORATION

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

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Preface

This guide was written primarily for USAF operational contracting officers who find themselves newly involved in environmental restoration projects. It should also be useful to help familiarize other new to mid-level managers involved in such projects with contracting issues.

The purpose of the guide is to serve as a source book for finding further information and to supplement, but not replace, the guidance found in other literature, such as the Federal Acquisition Regulation (FAR), DoD Standards and Specifications, Air Force Regulations, Manuals, and Pamphlets, and other documents described in the text.

The guide was developed under the graduate thesis research program at the Air Force Institute of Technology, Air University, Wright-Patterson AFB, OH 45433-6583. The author was Capt Grant Bowers, Graduate Student, Contract Management. The Thesis Advisor and permanent party contact for the guide is Professor Douglas Osgood, AFIT/DEM.

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I. Introduction

Overview. This guide was written to provide contracting officers with information they need to help implement the USAF program of base environmental restoration, which is called the Installation Restoration Program (IRP). The guide begins by providing background information and discussing other source material, then covers the contracting process in the roughly chronological fashion corresponding to the organization of the Federal Acquisition Regulation (FAR).

Approach. The guide explores the distinct challenges of IRP contracting by comparing how IRP contracts are developed to how other procurements progress. The guide then notes the similarities as well as the differences.

Perhaps the biggest challenge of IRP contracting is selecting a contract type and procurement method to best deal with the inherent technical and administrative complexity of environmental remediation. This guide seeks to assist the contracting officer by offering two models. The first, in Chapter V, provides guidance for matching the reimbursement method (cost-type vs. fixed-price) to the project phase. The second, in Chapter VIII, provides guidance for making decisions on whether to use A-E, construction, or service contracts.

Background. The Installation Restoration Program (IRP) is the Air Force component of the DoD environmental cleanup program and Defense Environmental Restoration Program (DERP). The IRP program includes cleanups on both operating and deactivated facilities.

Some typical sites on Air Force installations that require remediation (cleanup) are:

- landfills
- fire training areas
- sludge or waste lagoons
- waste pits
- POL tanks, pipelines and fueling operations areas
- HM/HW storage tanks or pipelines
- painting, stripping, cleaning, or degreasing areas
- aircraft and vehicle maintenance areas
- faulty oil/water separators areas
- old aircraft crash sites
- disposal areas for batteries, battery acids, low-level radioactive waste, or entomology or photography lab wastes

DERP activities are funded by an appropriation called the Defense Environmental Restoration Account (DERA), which is an appropriation of no-year money (at the DoD level). DERA funding is also "fenced" — that is, it can only be spent for environmental cleanup. Funding projections for DERA monies reflect that the IRP program will grow considerably in the coming years as current projects reach the remedial action (implementation) phase and as hazardous waste investigations uncover new problems. New management goals for IRP also reflect this expansion. The current

overall goal is for all sites to have some form of remedial action in place by the year 2000.

IRP contracting is a relatively new phenomenon with new technical problems, infant technologies, and unusual risks. Because it is inherently risky and administratively complex, IRP contracting often requires innovative contract management techniques. The following chapters will attempt to address a few of these special considerations.

Focus. Effective environmental remediation requires a team effort, and so this guide stresses complete and well-coordinated planning. To facilitate teamwork, the guide touches on the duties of technical personnel, legal staff, and public affairs as well as those of us in contracting. Since the task of cleaning up the military's past sins is a shared responsibility, a true team effort is fundamental to success. We must ensure that we determine the government's real minimum requirements and make informed decisions on how best to satisfy them. Only with proper planning can we put together a well thought-out contract that ensures cost effectiveness as well as ease of administration.

II. Organizing

USAF responsibility and authority for conducting the IRP program were established in four source documents: SARA Section 211 (Appendix B.3), CERCLA Section 120, (Appendix B.2), Executive Order 12580 (Appendix B.4), and the National Contingency Plan. These responsibilities and authorities are delegated within the Air Force annually by HQ USAF/CEEV in its FYxx [DERA] Management and Eligibility/Programming Guidance. Formal authority and responsibility are delegated to Installation Commanders in AFR 19-7 as shown in Figure 1.

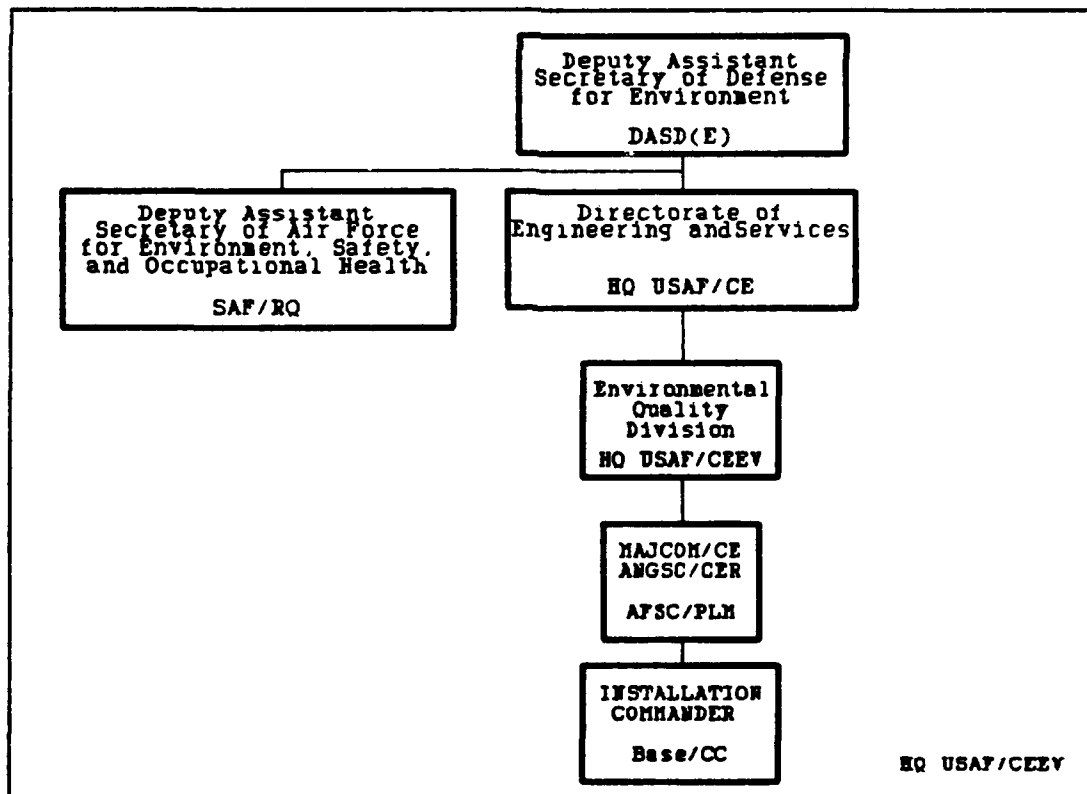


Figure 1. Program Management Delegation

Normally, the technical ("program management") tasks of IRP are delegated to the Base Civil Engineer (BCE). However, many Base Commanders implement the program by forming a separate office for IRP work (and RCRA hazardous waste minimization). This is typically called the base Office of Environmental Management (EM). A typical EM organization shown in Figure 2.

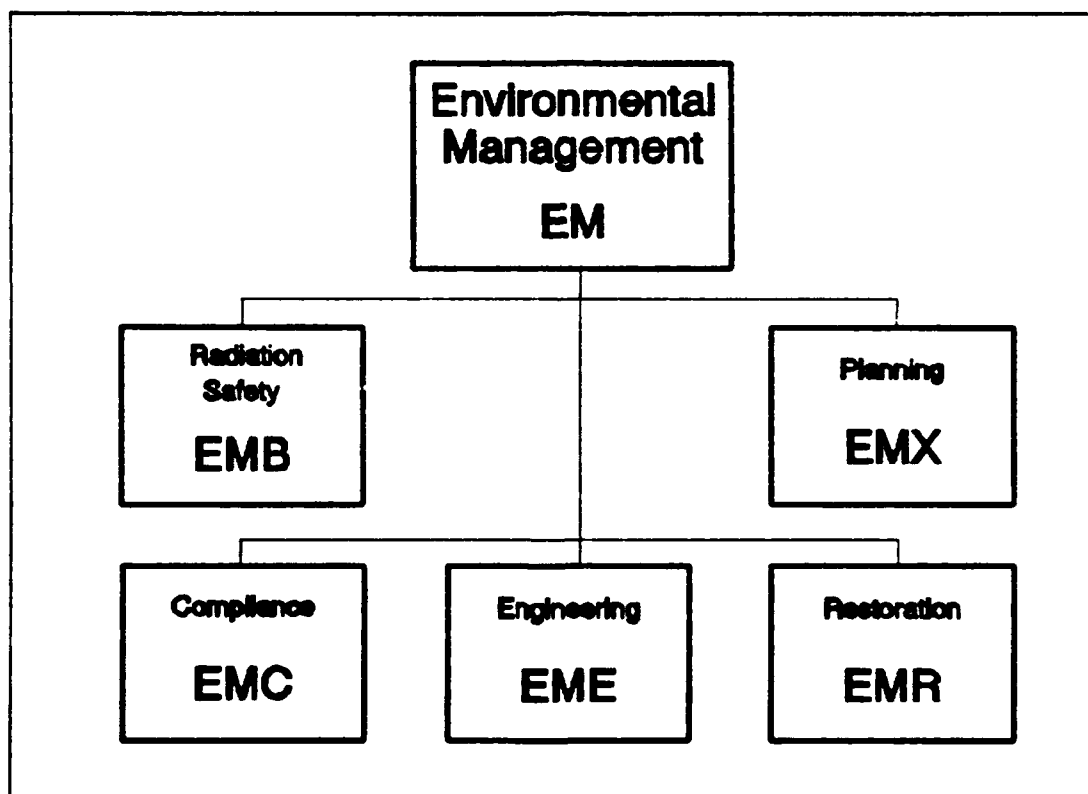


Figure 2. Base-level EM Organization (Typical)

Within CE (or EM), authority and responsibility for IRP work is vested in an On-Scene Coordinator/Remedial Project Manager (OSC/RPM, or simply RPM). The tasks delegated to

the RPM are described in detail in the HQ USAF publication *Air Force Installation Restoration Program Remedial Project Manager's Handbook* available from HQ USAF (see Chapter X).

One of the most important responsibilities of the OSC/RPM is the coordination of IRP efforts by all organizations on the installation, including civil engineering, operations, legal, public affairs, bioenvironmental engineering, and contracting. Figure 3 illustrates this horizontal differentiation of authority.

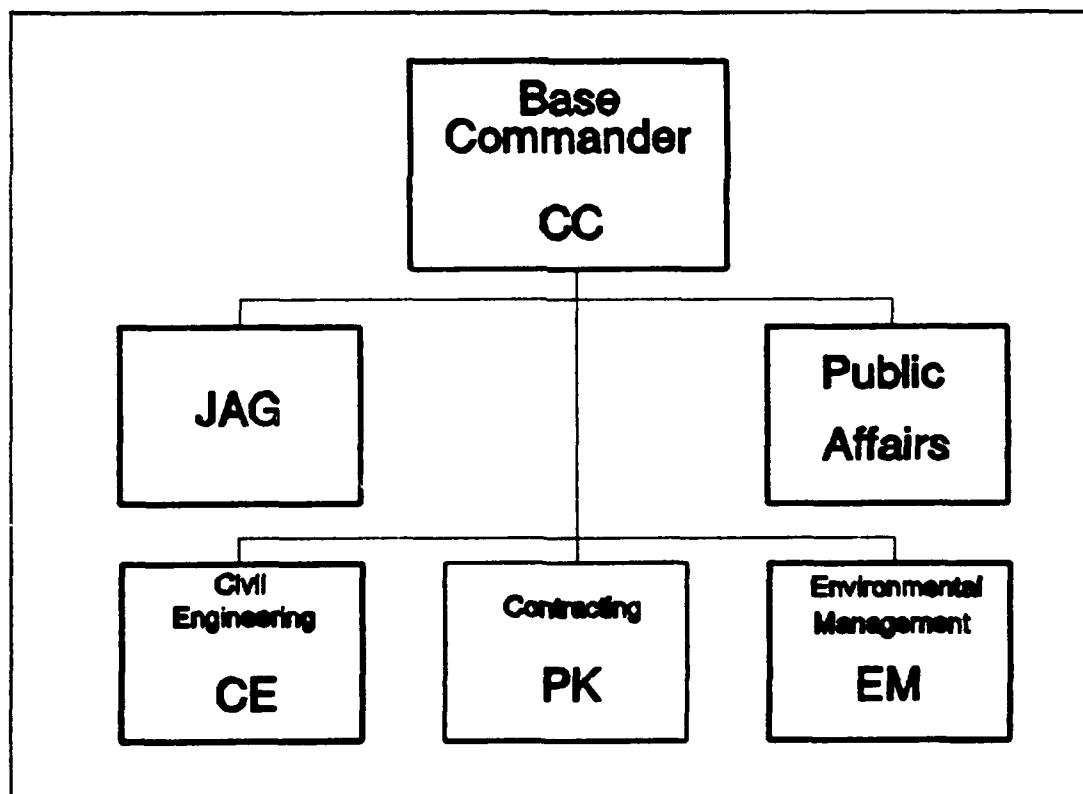


Figure 3. Horizontal Differentiation of Authority

Contracting Organization. Operational contracting offices are normally structured along the lines of the base contracting functions specified in AFR 70-8, resulting in an organization like that shown in Figure 4.

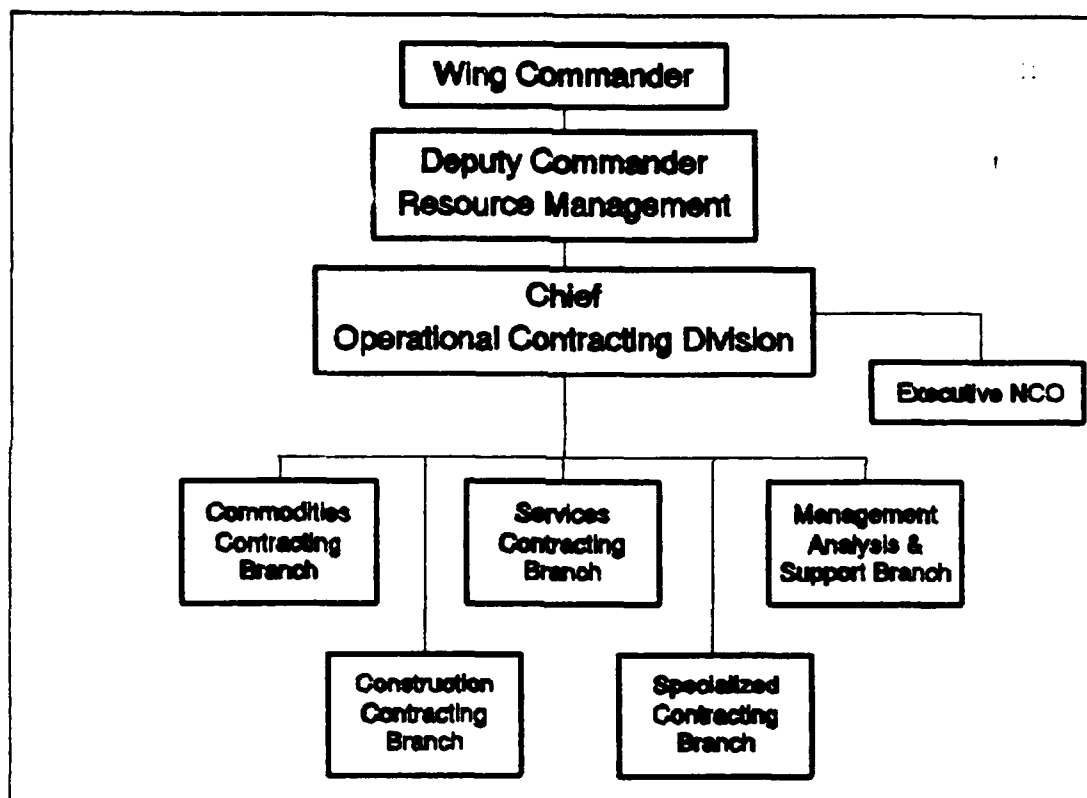


Figure 4. Contracting Organization

However, effective management of environmental contracts may sometimes require minor changes to this structure. Environmental contracting utilizes A-E, construction, and services contracts. Normally, construction is the predominate method. It may be more

efficient to accomplish this part of your service contracting function from within the construction branch, allowing you to present a single face to your customer. Environmental remediation projects can often be massive, technically complex, and involve high risks in terms of business liability as well as health. These risks sometimes result in the use of major cost reimbursement contracts which require substantial amounts of contract administration manpower. In addition, many innovative contracting techniques are being developed for IRP contracts. This can mean that the IRP contracting workload for your base will necessitate expansion of your existing branches or creation of new ones just for IRP work.

BCO/BCE/EM Interface. One of the most critical but commonly neglected coordination areas in operational contracting is between contracting and the CE (or EM) office. In EM it is the OSC/RPM that is responsible for preparing purchase requests and their supporting documentation for all procurements involving IRP work. The OSC/RPM may also act as the Technical Representative of the Contracting Officer (TRCO) in administering contracts.

Because the OSC/RPM is tasked with full responsibility for preparation of IRP work descriptions, the contract management office can easily be "left out of the loop" until formal contract coordination begins. Don't let this happen!

Don't let your first look at the SOW for a remediation project be when EM sends the purchase request formally and wants a short turnaround time. By then it's probably too late to do an effective job of revising the solicitation. Be sure that there's effective contracting representation on all Business Strategy Panels (AFR 70-14 or AFFARS App CC) as well as on the base Environmental Protection Committee (AFR 19-8). Remember: thoroughly coordinated acquisition planning is vital to a successful cleanup effort.

One last note: limited contracting authority is sometimes delegated to the BCE on construction contracts. This limited authority is normally delegated for modifications under the changes and differing site conditions clauses and for approval of material submittals. This delegation of limited contracting authority is authorized by AFFARS 1.603-2 (b).

III. Education

The primary source of environmental education for contracting officers is the new Air Force Institute of Technology (AFIT) Center for Environmental Education at Wright-Patterson AFB, Ohio. This newly established center at the AFIT School of Civil Engineering and Services already conducts several Professional Continuing Education (PCE) courses, including the USAF IRP Course, which is a one-week overview intended for all kinds of Air Force managers. The Center for Environmental Education is tasked to coordinate Air Force-wide education in environmental management, and so in addition to these PCE courses, AFIT has a new graduate program in Engineering and Environmental Management. There is also an existing PCE course on operational contracting, formally known as MGT 421, *Contracting for Civil Engineering*. This class provides an excellent opportunity to sharpen the skills required for an effective BCO/BCE/EM interface. AFIT is also in the process of developing two new PCE courses: ENV 417, *Environmental Restoration Project Management*, and ENV 418, *Environmental Contracting*.

Another source of environmental training is the U.S. Environmental Protection Agency (EPA). The EPA's Office of Solid Waste and Emergency Response Technology Innovation Office (OSWER) conducts courses on various topics related to IRP. These include classes from "Beginner" to "Advanced"

levels on technical topics such as hydrogeologic investigations, health risk assessments, and treatment technologies. They also offer classes on management areas such as CERCLA-specific topics, community relations, health and safety, and environmental contract administration. OSWER has a course catalog available from the Training Representatives at its Regional Offices, which are listed in Chapter X. Information on OSWER training is also available on its computer bulletin board system (BBS). Access to the OSWER BBS is available to all government employees toll-free at (800) 874-2884 by setting your computer modem to 300, 1200, or 2400 baud, No parity, 8 data bits, and one stop bit.

IV. Acquisition Planning

Introduction. There are three major factors which make IRP contracting particularly complex. First, environmental remediation projects are often far more technically complex than standard building construction. Hazardous waste cleanup projects often require special study efforts and the development of new technologies, there are special worker safety requirements, and the scope of work can change radically during contract performance. In addition, emergency cleanups or temporary measures ("interim remedial action") are often required during the initial study phase or during design.

Another special consideration is that new comprehensive environmental legislation has created new risks for contractors. For example, the Superfund law sets a legal standard of "strict joint and several liability" for environmental damage. This standard has resulted in government contractors being liable for cleanup costs, penalties, and fines when further cleanup is needed on hazardous wastes that they thought were adequately disposed of. Firms can be held liable even if they acted in accordance with detailed guidance from the contracting officer or subcontracted in good faith for proper disposal. In fact, even their lenders can be held liable.

The third factor is the administrative complexity of IRP contracting. Contracting for IRP cleanups requires day-to-day close coordination with, and often the approval of, federal, state, and even local government agencies and even public involvement in the approval process.

Acquisition planning is defined quite clearly in the FAR:

"Acquisition planning" means the process by which the efforts of all personnel responsible for an acquisition are coordinated and integrated through a comprehensive plan for fulfilling agency need in a timely manner and at a reasonable cost. It includes developing the overall strategy for managing the acquisition.

Likewise, so is the requirement that it be done:

Agencies shall perform acquisition planning . . . for all acquisitions . . . This planning shall integrate the efforts of all personnel responsible for significant aspects of the acquisition.

Not all procurements require a written acquisition plan. In fact, DFARS 207.103 sets a threshold for written plans for programs with \$5M development or \$30M total for production, or over \$5M production in a year. However, even on programs that do not require a written plan, the FAR requires that the planning be done.

FAR 7.104 gives an extensive list of minimum considerations for acquisition planning. A summary of these requirements is given in Table I. This planning guidance is primarily directed toward major systems acquisition programs, where a written plan is required. However, the

- Acquisition background and objectives
 - Statement of need
 - Applicable conditions
 - Cost
 - Life cycle cost
 - Design-to-cost
 - Application of should-cost
 - Capability or performance
 - Delivery or performance-period requirements
 - Tradeoffs
 - Risks
 - Acquisition Streamlining (added by DFARS)
- Plan of action
 - Sources
 - Competition
 - Overall planning for competition
 - Component or subsystem competition
 - Spare & repair parts competition
 - Subcontract competition
 - Source selection procedures
 - Contracting considerations
 - Budgeting and funding
 - Type of product descriptions used
 - Priorities, allocations, and allotments
 - Contractor vs. government performance
 - Management information requirements
 - Make or buy programs
 - Test and evaluation
 - Logistics considerations
 - Contractor vs. agency support
 - R&M and QA requirements, including warranties
 - Contractor data and data rights
 - Standardization concepts
 - Government-furnished property
 - Environmental considerations
 - Security requirements
 - Other considerations (as necessary)
 - Energy conservation measures
 - The industrial readiness program
 - The Defense Production Act
 - The Occupational Health and Safety Act
 - Foreign sales
 - Other matters not covered elsewhere
 - Milestones for the acquisition (including:)
 - Acquisition plan approval
 - Statement of work
 - Specifications
 - Data requirements
 - Completion of acquisition-package preparation
 - Purchase request
 - J&A for other than F&OC
 - Any other required D&F approval
 - Issuance of synopsis
 - Issuance of solicitation
 - Evaluation of proposals, audits, and field reports
 - Beginning and completion of negotiations
 - Contract preparation, review, and clearance
 - Identification of acquisition planning participants

Table I. Acquisition Planning Requirements (FAR 7.102)

FAR requires that these areas be considered for all acquisitions, so this list can be used as a guide along with detailed instructions available in AFR 800-2, the DSMC Acquisition Strategy Guide, AR70-1, and NAVMATINST 5000.29A.

Cost Analysis. Another of the important, yet difficult parts of environmental project planning is cost/price analysis. Since IRP contracting is relatively young, there are fewer sources of pricing information as compared to contracting for standard building construction. However, we have to find some way to do an adequate job. After all, the contracting officer is responsible (FAR 15.802-5) for selecting and using whatever analysis techniques will ensure a fair and reasonable price.

Luckily, there are at least a few sources available. The Department of the Navy, Naval Facilities Engineering Command (NAVFAC) has published a comprehensive guide to hazardous waste cleanup technologies. This guide is put together by NAVFAC's Naval Energy and Environmental Support Activity (NEESA). The NEESA guide is primarily directed toward providing IRP program managers with technical information, but it also contains information that can be useful in developing independent government cost estimates.

Another good source is the US Army Toxic and Hazardous Materials Agency (USATHAMA). USATHAMA has published a report entitled *Installation Restoration and Hazardous Waste*

Control Technologies (USATHAMA Report No. NIPER-332) which describes various technologies and gives estimated costs.

Finally, the US Environmental Protection Agency (EPA) publishes many documents pertaining to IRP cleanup. Their *EPA Catalog of Superfund Program Publications* lists and describes these publications. The catalog includes publications on EPA experience with contract management techniques including types of contracts, management interfaces, claims, and other topics, including financial management. Notable examples are their *Remedial Action Costing Procedures Manual* and *Removal Cost Management Manual*. The catalog also lists numerous publications on technical topics and other functional areas, such as public affairs and legal considerations.

Of course, detailed guidance for pricing in general is available from the Armed Services Pricing Manual. In addition to this, AFLMC has developed AFP 70-6, which is entitled *Guide for Air Force Base Level Pricing*, and the HQ AFLC Directorate of Contracting has developed a useful pricing guide. Should-Cost techniques can be useful on IRP projects and should be given serious consideration.

Air Force policy on Should-Cost techniques (see AFP 70-5) is that they are mandatory only on AFSC and AFLC contracts over certain dollar thresholds. However, these techniques are useful even on smaller contracts. If you use

them, you'll need to write a D&F. AFFARS 15.810 notes that Should-Cost techniques "may also be applied to contracts below the mandatory dollar thresholds when the contracting office determines that significant savings can be achieved in comparison to the resources applied to Should-Cost."

Initiating an Acquisition Plan. AFR 70-8 helps implement the FAR requirement for planning. Paragraph 3 reads, in part, "Services Contracting . . . Looks at purchase requests for sufficiency . . . Sets up contracting plan." At the same time, AFR 19-7 specifically delegates the responsibility for environmental remediation planning to the BCE. Paragraph 8 reads "[the] Base Civil Engineer . . . Starts facility programming action or operational modifications to correct violations of standards or trends in pollution concentrations that could lead to violations." AFR 70-14 (AFFARS Appendix CC) helps implement this shared responsibility through the "Business Strategy Panel" concept. When required by the MAJCOM, and on major programs, the project's Source Selection Plan often requires the same planning (see AFR 70-15 or AFFARS Appendix BB). These multiple requirements help ensure that coordinated planning is initiated, but it is up to support the Source Selection Panel and the Business Strategy Planning Group to ensure that they are really effective.

Coordination of planning between the CO and CE (or EM) can also be greatly enhanced through effective CO representation on the base Environmental Protection Committee (EPC). AFR 19-8 requires an EPC at each installation, and Paragraph 2.c. requires both contracting and CE (or EM) membership on this committee. Contracting can play a key role in the EPC by ensuring that the meetings adequately address all the areas of acquisition planning required by the FAR.

Funding, Programming. Who's going to pay for your IRP project? Is your project eligible for DERA funds, or must you use MILCON funds or O&M? By and large, these questions must be answered by the BCE (or EM). However, the contracting office must help ensure that these questions are answered early by doing thorough acquisition planning.

The Defense Environmental Remediation Authorization (DERA) is an appropriation established by Congress to fund the DoD effort in environmental restoration. Eligibility and application methods for DERA funds are explained in detail by HQ USAF/CEEV in its FYxx [DERA] Management and Eligibility/Programming Guidance. DERA funds may only be applied to approved requirements, and approval authority is currently retained by SAF/MIQ.

DERA funds are no-year dollars (at the DoD level) and take on the color of money of the project, making them

relatively easy to obligate effectively. However, it should be noted that they are 'fenced.' DERA money can only be spent for remediation projects, and only until the tenth year of the project. After that time, O&M funds must be used for whatever continuing treatment may be needed.

Project Phasing. Transitions between the phases of an IRP project require the CO to take affirmative action to ensure coordination of effort between the contracting office, contract administrators, the BCE (user), and regulators (EPA). Figure 5 shows the phases of an IRP project.

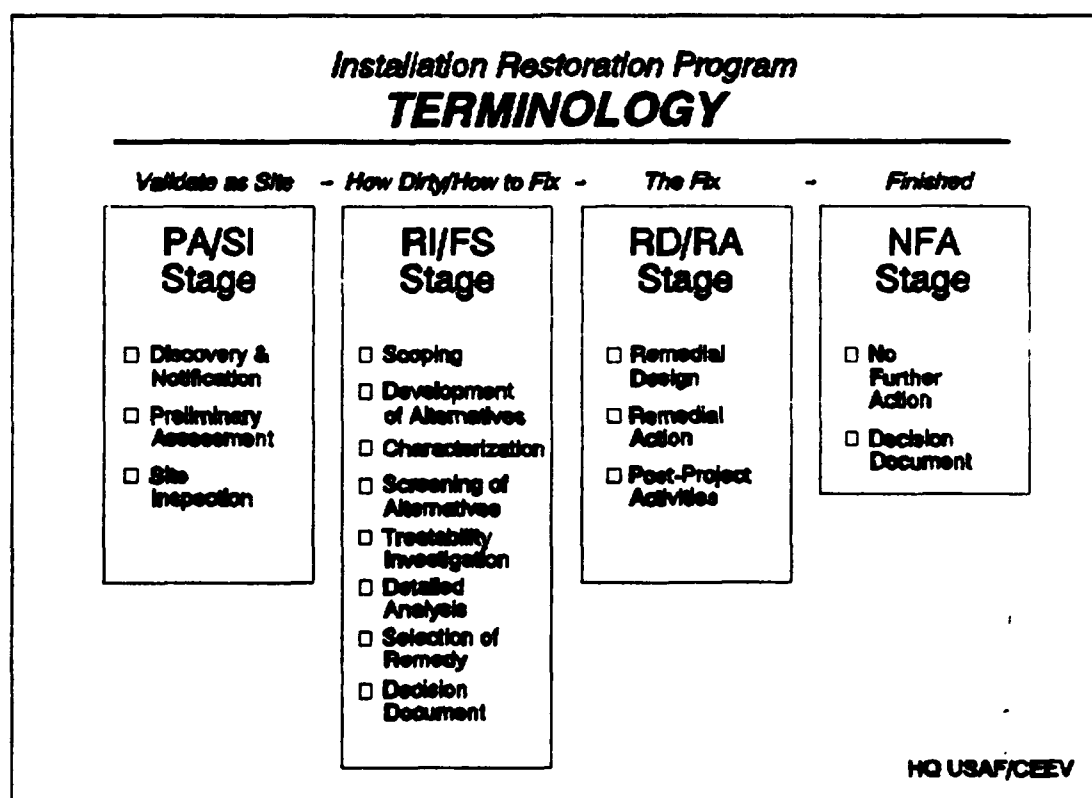


Figure 5. Stages of an IRP project.

Acquisition planning for IRP projects must consider phase transitions in detail, in terms of who will accomplish what effort. On environmental remediation projects, the character of tasks (A-E, construction, or services) often transcends the stages. For example, there can be interim remedial action requiring construction during the RI/FS stage, or there may be further design work required when new hazardous wastes are uncovered during the RA. To be aware of such possibilities during early acquisition planning, the contracting officer should become familiar with the various methods of specifying.

The technical complexities of an IRP project can mean that the project consists of substantial overlap between A-E tasks (studies, design, and Title II services), construction (remedial action), service contracts, USAF in-house work, contract administration, and work by other government agencies. There may even be cycling between study and remedial action tasks. It is not uncommon to find that the remediation technique has failed or that cleanup standards have changed in the middle of the project, requiring major design changes. Purely sequential reprocurement between these "phases" can lead to inefficiencies due not only to the lead time for competitive procurements, but also to differences in design philosophy and documentation standards between various contractors.

Acquisition planning for remediation can be complicated by many other factors. For example, it takes great care to ensure that Miller Act, Davis-Bacon Act, Service Contract Act, and Brooks Act requirements (bonding, wage determinations, and A-E procurement methods) are adequately considered while attempting to maximize competition and minimize the costs of duplicate effort and over-standardization.

IRP Management Resources. Base-level organizations often lack the technical and managerial expertise necessary to conduct a large and complex IRP project. Fortunately, there are sources of expertise available to all bases.

Service Agencies. The most-used sources are the several major service agencies who do IRP work routinely. Most of the IRP work in the Air Force is conducted by one of four service agencies. These are: (1) Air Force Human Systems Division (HSD), (2) a Department of Energy (DOE) contractor known as the Hazardous Waste Remedial Action Program (HAZWRAP), (3) the Army Corps of Engineers, and (4) the Naval Facilities Engineering Command (NAVFAC).

HSD accomplishes approximately one third of all Air Force RI/FS (investigative) work. Their contracting office, formerly at Wright-Patterson AFB, Ohio, is now collocated with them at Brooks AFB, Texas. HSD uses Mitre Corporation, Civil Systems (McLean, VA) as a QA/QC contractor. Through

Mitre, HSD will evaluate contractor products, do overall program evaluations, and provide litigation support. HSD also has information available on several innovative contract methods.

The services of the other three organizations are provided through memoranda of agreement (MOAs) which the Air Force has negotiated with those agencies. In general, these MOAs provide a framework within which the MAJCOMs or installations can initiate task orders with another Federal Agency to accomplish work funded through DERA. These service agencies can even provide contract management services in addition to technical support. When requesting these services, remember that in accordance with the Economy Act (31 USC 1535 et seq.) and the delegation in DFARS 217.502, contracting officers at the installation level must not use service agencies to avoid the requirements for competition in contracting, and must document the justification for using other than DoD resources in a determination and findings (D&F) prior to submitting a MIPR for funding.

HAZWRAP, a subsidiary of Martin Marietta Corp., acts as program integrator for USAF DERA work accomplished through interagency agreements by the Department of Energy operations at Oak Ridge National Laboratory. HAZWRAP

conducts its operations through Management and Operating Contracts, which are described in Subpart 17.6 of the FAR.

In addition to conducting most of the Army cleanup projects, the Army Corps of Engineers (USACE) accomplishes the cleanups on inactive DoD sites through its Formerly Used Defense Sites (FUDS) program and supports the EPA in Superfund cleanups. This vast amount of experience means that not only can USACE can provide comprehensive technical support to IRP projects, but that they have a substantial amount contract management experience to draw upon.

NAVFAC is construction agent for thirteen Air Force Bases. They have extensive experience doing both construction and IRP work on Air Force Bases. Through their Navy Energy and Environmental Support Activity (NEESA) at Port Hueneme, California and various Engineering Field Divisions across the country they provide contracting expertise for IRP as well as technical and program management support.

Remember, if a service agency is to be used, the acquisition plan must discuss which one is to be used, how agreements (MOUs) are done, and exactly what work the service agency will accomplish.

Contractors. Another method of developing your IRP project is to use a contractor as integrator. The most common way this is done is the use of the design-build

method, which is sometimes called "turnkey" contracting. This method is discouraged by FAR 36.209, which states "No contract for the construction of a project shall be awarded to the firm that designed the project or its subsidiaries or affiliates, except with the approval of the head of the agency or authorized representative."

One reason the design-build method is discouraged is that contract administration costs can be very demanding. Design-build requires extra contract administration resources to ensure against "gold-plating" of designs and to keep the contractor motivated to reach the closeout stage. If considering design-build remediation, the Justification and Approval (J&A) for less than Full & Open Competition must address this consideration adequately. This is likely to be difficult, unless the cleanup requirements and technologies are well understood and sufficient contract administration resources are readily available. This type of contract may require maintaining a SPO-like environment using a service agent to help administer changes.

As a parallel, consider that major weapons system contracting is often essentially "design-build." Production contracts are often sole-sourced to the Engineering and Manufacturing Development (formerly known as Full Scale Development) contractor after cost analysis is documented in

a J&A, showing that competitive procurement is not cost-effective.

Design-build contracting is often dismissed out of hand due to a perceived "conflict of interest" between the designers and builders (fear of "gold-plating"). However, there are times when design-build is the most cost-effective manner of procurement. For example, when recompeting between phases, the RA (construction) contractor may not have a proprietary technology available to the RD (design) contractor. This almost assures an adverse cost/schedule impact. In such a case, if known design-build contractors are available, this method should not be eliminated arbitrarily.

Summary. One final note on acquisition planning: the acquisition plan *must* be a living document. The success of a remediation program can hinge on whether the acquisition plan is useful or just a square filler. Use the plan to ensure that not only the program management community, but the buyers and the contract administrators are always aware of program strategy. They depend on you to keep the acquisition plan up to date and keep them aware of the changes. Make sure they're part of the team.

V. Contracting Methods & Types

Introduction. Environmental remediation projects are as varied as the sites on which they are conducted, and so a wide variety of solicitations and contracts are used. As with other contracts, the selection of a procurement method must be based upon many factors, such as:

- End purpose (A-E, construction, demolition, service, supply, or utility contracts)
- Responsibility for cost performance
- Dollar amount
- Certainty of requirements
- Competition considerations
- Statutory socioeconomic requirements (such as small business considerations)
- Urgency

One of the most important of these factors to consider is responsibility for cost performance. IRP contracts often involve significant technical, legal, and health risks above those seen in other contracts. These risks must be analyzed in as much detail as possible to ensure that the procurement method you choose and the contract type consider the unique cost performance considerations of IRP contracting.

Sealed Bidding. Procurement through sealed bidding is not often used in IRP contracting. FAR 6.401 prescribes procurement through the use of sealed bidding as a rule, but

with four requirements. Perhaps the foremost of these is that sealed bid awards are made solely on the basis of "price and price-related factors" (FAR 6.4(a)(2)). On IRP projects it is usually preferable to use negotiated procurement so that other evaluation factors may be brought in. Awards may be made on the basis of ownership of proprietary cleanup technologies, demonstrated experience with a particular technology, contractor location, or other technical factors. Another reason for negotiated procurements is that the technical and administrative complexity of IRP projects often makes it "necessary to conduct discussions with the responding offerors about their bids" (FAR 6.4(a)(3)). The third requirement in the FAR is that for sealed bidding there must be "reasonable expectation of receiving more than one sealed bid" (FAR 6.4(a)(4)). The technical and administrative complexities and risks inherent in IRP contracting can limit the number of contractors willing or able to enter this industry, and so at times there may be only one offeror. The fourth and last requirement is that there must be sufficient time to use sealed bidding. In IRP contracting, project requirements can easily limit the amount of time available. There are statutory deadlines in SARA which give times by which remedial actions must start for certain classes of cleanups. In addition, emergency action is sometimes

necessary to clean up hazardous spills. Lastly, the cost of the cleanup is often a function of how quickly the cleanup is started. This is particularly true in the case of chemical contamination of an aquifer. If the start of cleanup is delayed, the chemical plume within the aquifer can spread over a wide area and require long-term treatment, and even permanent facilities.

Contracting by Negotiation. In negotiated procurements for IRP, one item of particular importance is that source selection evaluation criteria can be particularly complex. Early coordination with the technical activity (CE or EM) is important, because the criteria must be clearly stated in the solicitation (see FAR 15.605(e)). The CO needs to enlist the earliest possible help from the technical activity in determining which evaluation factors are the most important to the success of the cleanup.

Types of Contracts. There are two factors in the selection of a contract type: the compensation arrangements (fixed price vs. cost-reimbursement, economic price adjustments, price redetermination arrangements, incentives, and fees) and the delivery arrangements (definite vs. indefinite delivery, definite vs. indefinite quantity, and time-and-materials and labor-hour arrangements).

Compensation Arrangements. The FAR instructs us to select compensation arrangements based largely on the availability of firm pricing information (FAR 16.301-3, et al.). IRP contracts run the gamut from those with well understood requirements to those with extreme technical and administrative risks. Some projects have very few unknowns. For example, a simple cleanup might involve commercial well drilling and the construction of an air stripping tower to remove volatile organic compounds (VOCs) from drinking water. This can probably be performed with a firm-fixed-price contract. On the other hand, the project might have to deal with a spill of unknown characteristics in poorly understood geological strata or require development of a new cleanup technology. Such a project may require a cost-reimbursement contract with multiple incentives.

Since few projects fit into these extremes, selecting and negotiating the "right" contract type can require extensive effort. A good way to start is to consider the factors in FAR 16.104 as they apply to IRP projects. The spreadsheet in Figure 6 provides a framework for modelling these factors. To begin using the model, study each of the factors as in the detailed directions on page 31, and then evaluate each factor by assigning a raw score between zero and 100.

<u>FACTOR</u>	<u>RAW SCORE</u>		<u>RELATIVE WEIGHT</u>	=	<u>SCORE</u>
1. Price competition	_____ X _____				
2. Price analysis	_____ X _____				
3. Cost analysis	_____ X _____				
4. Technology availability	_____ X _____				
5. Substance type	_____ X _____				
6. Hydrogeological uncertainty	_____ X _____				
7. Regulatory uncertainty	_____ X _____				
8. Health hazards	_____ X _____				
9. Deadlines	_____ X _____				
10. Performance period	_____ X _____				
11. Extent of subcontracting	_____ X _____				
12. Subcontract management skill	_____ X _____				
	TOTAL		100		
					+100
			TOTAL SCORE		_____

FFP FPAF FP-EPA FPIF GPIF CPAF CPFF

0 25 50 75 100

Figure 6. Contract Type Selection Model

Notes to Figure 6

Score the individual factors as follows:

1. Price competition. A score of 0 indicates the ideal of perfect competition on price (many offerors, realistic pricing). A score of 100 indicates no competition (sole source).
2. Price analysis. This score indicates the degree to which price analysis can provide a realistic pricing standard. A score of 0 indicates the ideal of perfect pricing. A score of 100 indicates no pricing analysis is available.
3. Cost analysis. This score indicates the uncertainties anticipated in performance and their effect on contract price as indicated by cost analysis. A score of 0 indicates the uncertainties have no expected effect on cost. A score of 100 indicates the highest degree of effect.
4. Technology availability. A score of 0 here indicates existing, commonly used technology in the extreme, such as simple excavation. A score of 100 here indicates that new cleanup technology is expected to be developed or that the expected technology has not been applied to similar site conditions.
5. Substance type. A score of 0 indicates simple and well-understood contaminant characteristics, such as a minor spill of a semisolid, barely toxic substance. A score of 100 indicates a spill of complex or poorly understood substances, like highly volatile or highly reactive liquids, or poorly understood mixtures, or a spill location which adds complexity to the cleanup.
6. Hydrogeological conditions. A score of 0 indicates simple and well-understood site conditions, and complete data on the spill. A score of 100 indicates complex and poorly understood site conditions, such as an underground spill of unknown extent spill affecting an aquifer with unknown hydrogeological conditions.
7. Regulatory uncertainty. A low score indicates that no collateral agency or public involvement is anticipated or that a cleanup method has been agreed upon and a Record of Decision filed. A high score indicates a project for which it is anticipated that there may be substantial interagency coordination required.

Notes to Figure 6 (Cont'd)

8. Health hazards. Some serious health hazards in IRP are heavy spills which present a high risk of concentrations of known carcinogens or highly toxic chemicals near population centers, or which require significant handling during cleanup. These hazards create urgency in cleanup requirements. To paraphrase FAR 16.194(e), when urgency is a primary factor, the Government may choose to assume a greater proportion of the risk (a higher score on this factor) or it may offer incentives to ensure timely contract performance. A low score on this factor indicates that the material is relatively nontoxic or at least nonvolatile, the spill site is stable, far away from population and is not likely to come in contact with water resources.
9. Deadlines. Urgent requirements can also be created by administrative deadlines for cleanup, such as deadlines for emergency cleanups, response to EPA Notices of Violation, SARA requirements for initiation of remedial action, or the internal goals of the IRP program. When such requirements exist, give this factor a higher score in the model or consider cost or schedule incentives.
10. Period of performance. As noted in the FAR, "[i]n times of economic uncertainty, contracts extending over a relatively long period may require economic price adjustment terms." Treat scoring in the model as with urgent requirements.
11. Extent of subcontracting. As noted in the FAR, "[i]f the contractor proposes extensive subcontracting, a contract type reflecting the actual risks to the prime contractor should be selected." Give higher scores to reflect any added risk.
12. Subcontract management skill. Give low scores if little (or unfavorable) information is available on the contractor's ability to incentivize subcontractors to control cost performance.

After scores are assigned, assign a weight to each factor to indicate its relative importance. These must total 100.

After assigning scores and weights, calculate a total score. Using this score, locate the corresponding point on the scale at the bottom of the spreadsheet. This point indicates a place on the continuum to start in considering a contract type.

Along with the quantitative factors in the model, there are several qualitative factors to consider. One is that consideration should be given to the technical skill and financial stability of the offerors. Also, be aware of the quality of your contractors' accounting systems (when considering other than an FFP contract) and the effect on performance of any concurrent operations under other contracts. These considerations are explained further in FAR 16.104.

For additional help in selecting a method and type, consider tapping the experience of the major service agencies. They have employed a wide range of contract types. NAVFAC, for example, uses what they have termed the "CLEAN" contract (Comprehensive Long-term Environmental Action — Navy) to overcome some of the problems in transitioning from PA/SI (investigation) to RI/FS (study). These are ten-year CPAF contracts, and they allow for interim remedial action during the RI/FS stage. HAZWRAP

uses CPFF and CPIF subcontracts to conduct the RI/FS (investigation) and remedial design with a single contractor. With these contracts they retain a single subcontractor for each of eight regions of the country. Remedial action can often be done with fixed-price contracts while the RD contractor performs construction oversight (the equivalent of Title II A-E services). This approach gives the benefits of continuity between the investigation and design phases while maximizing competition.

Delivery Arrangements. The service agencies have also employed a wide range of delivery arrangements.

HSD. Human Systems Division (AFSC) presently does approximately one third of the Air Force RI/FS (investigative) work. For this work, the most-used types of contracts are Multiple Indefinite Delivery and Time & Materials contracts. These contracts have prenegotiated rates, options for five years and escalation clauses. HSD negotiates individual delivery orders under these contracts. They awarded ten new contracts in May of 1990 with a \$50M ceiling (each). The contracts also have an emergency clause which establishes verbal contract authority. The contractor must respond within 8 hours. This authority is only used for serious health/environmental threats. So far, HSD has been happy with this provision, but they are mindful that they must be careful not to abuse this authority.

USACE. The Corps uses three basic kinds of contracts:

- A-E IDIQ contracts
- Preplaced Remedial Action Contracts
- Rapid Response Contracts

The IDIQ contracts for A-E services provide regional A-E firms to investigate, study and/or design at hazardous waste sites. Task orders are written for individual requirements. The total time required to award a site-specific contract is only 90-120 days, and after this award is made, task orders can be awarded within 30 days.

The Preplaced Remedial Action Contracts provide in-place service contracts for remedial actions at hazardous waste sites where the design has already been completed. These contracts are used primarily to help meet the remedial action start dates mandated by statute (SARA). Using these contracts, work can sometimes commence on sites where the design is not yet 100% complete. Delivery orders for these contracts are normally awarded in 60-90 days.

The Rapid Response Contracts provide a services contractor (not an A-E or construction contractor) to perform removal actions in a timely manner at hazardous waste sites. These contracts were developed to use where it is necessary to begin work promptly to mitigate possible health effects, meet regulatory requirements like an EPA Notice of Violation, or control point sources of

contamination in a timely manner (including cleaning up small spills). Rapid Response delivery orders can be awarded in 45 to 60 days as compared to the USACE norm of 120 to 150 days for a site-specific removal contract.

NAVFAC. The Navy has developed a Remedial Action Contract (RAC) to span the RD and RA (design and remediation) phases with a single solicitation. With a RAC contract, a Navy regional office retains a contractor who is proficient in cleaning up a particular type of contaminant. The RAC contract allows any of the Navy's other regions to develop a task order for that contractor.

Conclusions. In addition to considering risk and using other agencies' contracts as examples, consider the contracts your agency tends to be most successful with. A specific kind of contract may work well for one agency and not for others. For example, several agencies have awarded significant amounts of cost-type contracts on high-risk IRP projects and subsequently had trouble controlling costs. Despite HAZWRAP's apparent successes with cost-type contracts, they should be used by bases only with great care and rarely (if ever) for remedial action.

Large bases may want to consider the use of indefinite delivery, indefinite quantity (IDIQ) contracts, particularly for remedial actions, where requirements must be flexible. The IDIQ contract used by Wright-Patterson AFB is a good

example. This contract retains several contractors by paying a minimum fee and controls costs by creating competition for individual task orders as requirements materialize.

Finally, keep in mind that the success of another agency with a specific procurement method or contract type does not guarantee that it will be successful for you. Consider what types of contracts your agency is successful with, check the availability and skill level of contract administration and audit resources, and examine any other factors that can add to performance risk.

VI. Socioeconomic Programs

SBA/SADBUS. The risks and complexity of environmental analysis and remediation can act as barriers to entry into the business. As a result, in reviewing solicitations for Small & Disadvantaged Business (SADBUS) concerns, the CO must consider whether these barriers to entry make fewer minority contractors available. Likewise, in reviewing the contractor's subcontracting plan, the CO should consider entry barriers in reviewing the contractor's subcontracting goals.

Labor Laws. It is often difficult to define when the labor laws noted in Part 22 of the FAR apply (particularly the Davis-Bacon Act) because of the nature of IRP tasks. Take for example an RI/FS effort undertaken with an A-E contract entered into under the procedures in AFR 88-31 (the Brooks Act procedures). The detailed site analysis and interim (temporary) remedial action done on such a contract will often involve tasks defined as construction by FAR 22.401, such as drilling, dredging, shoring, excavating, and clearing.

FAR 22.402 (b) notes that labor standards do not apply to such contracts where "the construction work is incidental to the furnishing of . . . services [unless] . . . a substantial and segregable amount of construction,

alteration or repair is required, . . . or . . . the construction work is so merged with nonconstruction work or so fragmented in terms of the locations or time spans in which it is to be performed, that it is not capable of being segregated as a separate contractual requirement."

One way, obviously, to define "capable of being segregated" is that construction work is a separate line item in the contract. In addition, the Department of Labor has issued advisory memoranda which indicate that another way construction work is determined to be "segregable" is when it requires separate schedules.

The 1991 issue of DFARS helps define how the Davis-Bacon Act (DBA) and Service Contract Act (SCA) are to be applied for installation support contracts. Section 222.402-70 instructs us to apply DBA and SCA to appropriate tasks in a service contract which contains "a substantial and segregable amount of construction . . . exceed[ing] \$2,000." This new DFARS also sets thresholds for the application of SCA and DBA to individual orders or service calls under such a contract, where it is unclear whether the character of the work should be judged as service or construction. In such cases, DBA is applied to orders of 32 or more work-hours or painting of 200 square feet or more, with SCA requirements applied to smaller orders. For more

discussion on this topic (construction vs. service contracts), see Chapter VIII.

Environment. Contracting officers must be aware that they may need to review the EPA listing (40 CFR Part 15) of facilities who are violators of the Clean Air Act or Clean Water Act to ensure they do not enter into, renew, or extend contracts with contractors convicted of violations, even on contracts of less than \$100,000. Note that the certification clause, 52.223-1, is not required on contracts under \$100,000, and so may not give the CO a 'heads-up' in such cases.

FAR Subpart 23.3 requires the CO to insert the clause at 52.223-3 under conditions that apply to most IRP contracts. This clause was written contemplating the manufacture of hazardous materials, not their cleanup and removal, but it still applies. Note especially that both DFARS and AFFARS supplement this section. DFARS substitutes a DoD version of the clause, 252.223-7004.

Foreign Acquisition. CERCLA and SARA requirements do not apply in general to overseas pollution problems, but this does not mean that the CO is only responsible for complying with local requirements. The Installation Restoration Program (IRP) is established by AFR 19-7, which tasks Air Force Commanders with the responsibility to "Develop and

implement . . . programs that comply with . . . [FWPCA, CAA, NCA, MPRSA, RCRA, FEPCA, TSCA, CERCLA, and SDWA]." This regulation also includes a note that reads as follows:

"Federal environmental statutes do not apply overseas; however, when practical, environmental monitoring policies and responsibilities of this regulation are applied overseas. US Air Force installations and facilities overseas must comply with applicable host country laws and regulations on environmental monitoring."

VII. General Contracting Requirements

Bonds. When considering bonding requirements, be sure you have enough understanding of the nature of all the tasks in your contract to decide whether or not the Miller Act requirements apply. FAR 28.102-1(a) notes that "The Miller Act (40 U.S.C. 270a-270f) requires performance and payment bonds for any construction contract [emphasis added] exceeding \$25,000." The term "construction contract" is open to interpretation and may include any segregable construction in a services (or A-E) contract.

The FAR also notes (in section 28.103) that "Generally, agencies shall not require performance and payment bonds for other than construction contracts. However, performance and payment bonds may be . . . required when necessary to protect the government's interest.

Remember to specify only the government's minimum requirements for bonding, but neither should the requirements be understated. In general, the service agencies for IRP have found that bonding is available to contractors, although at somewhat greater cost. There is, however, some feeling that the cost and availability of performance bonds for particularly high-risk remedial actions can be somewhat prohibitive, and may occasionally limit the number of offerors.

Contract Cost Principles and Procedures. Pricing information specific to environmental remediation is somewhat scarce, but there are at least a few sources, particularly the service agencies, the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), and the U. S. Environmental Protection Agency (EPA). These sources are listed in Chapter X.

Recently there has been some question of the allowability of costs for fines and penalties assessed against contractors for noncompliance with environmental statutes. A word to the wise should be sufficient — be careful! FAR 31.205-15(a) says:

Costs of fines and penalties resulting from violations of, or failure of the contractor to comply with, Federal, State, local, or foreign laws and regulations, are *unallowable* [emphasis added] except when incurred as a result of compliance with specific terms and conditions of the contract or written instructions from the contracting officer.

Pricers should also be aware that there are added technical, health, and administrative complexities in IRP contracting. These will often be accounted for in higher "contingency costs" (see FAR 31.205-7) than those seen in other contracts.

VIII. Special Categories of Contracting

R&D. Many of the physical conditions on IRP sites vary widely, particularly the type and amount of hazardous waste and the hydrogeological framework of the site. The variances make remedial action technologies very much site-specific. Many projects require the applications of new technologies, or at least the application of existing technologies under new and different conditions. The Air Force Civil Engineering Support Agency (AFCESA) is one of several centers conducting R&D to develop new cleanup technologies and applications. Others include USATHAMA, EPA laboratories, and the Navy Energy and Environmental Support Activity (NEESA).

The wording of the DERA authorization act expedites the R&D efforts that may occasionally be required to develop applications at bases by providing funds with no 'color of money,' at least at the DoD level. These funds are merely 'fenced' so that they can be spent only on remediation.

A-E, Construction, and Service Contracts. A common difficulty in IRP contracting is determining whether to use a service, a construction, or an A-E contract to procure the effort. One example is the need for procurement of "interim remedial action" during the RI/FS (investigation) phase. Architect-Engineer (A-E) contracts are the predominant

choice for RI/FS, but the investigation often requires tasks that appear to be of a construction nature, such as excavation, shoring, trenching, and drilling, and so it may be unclear whether Davis-Bacon Act wage grade determinations are applicable. Similarly, environmental studies and analysis are often needed which require professional competence, but not necessarily of an architectural or engineering nature. In this case it may be unclear whether they must be procured under AFR 88-31 (Brooks Act A-E) procedures. Figure 7 outlines the decision process for making these decisions. To use the chart, refer to the directions for the individual blocks, which can be found on page 47.

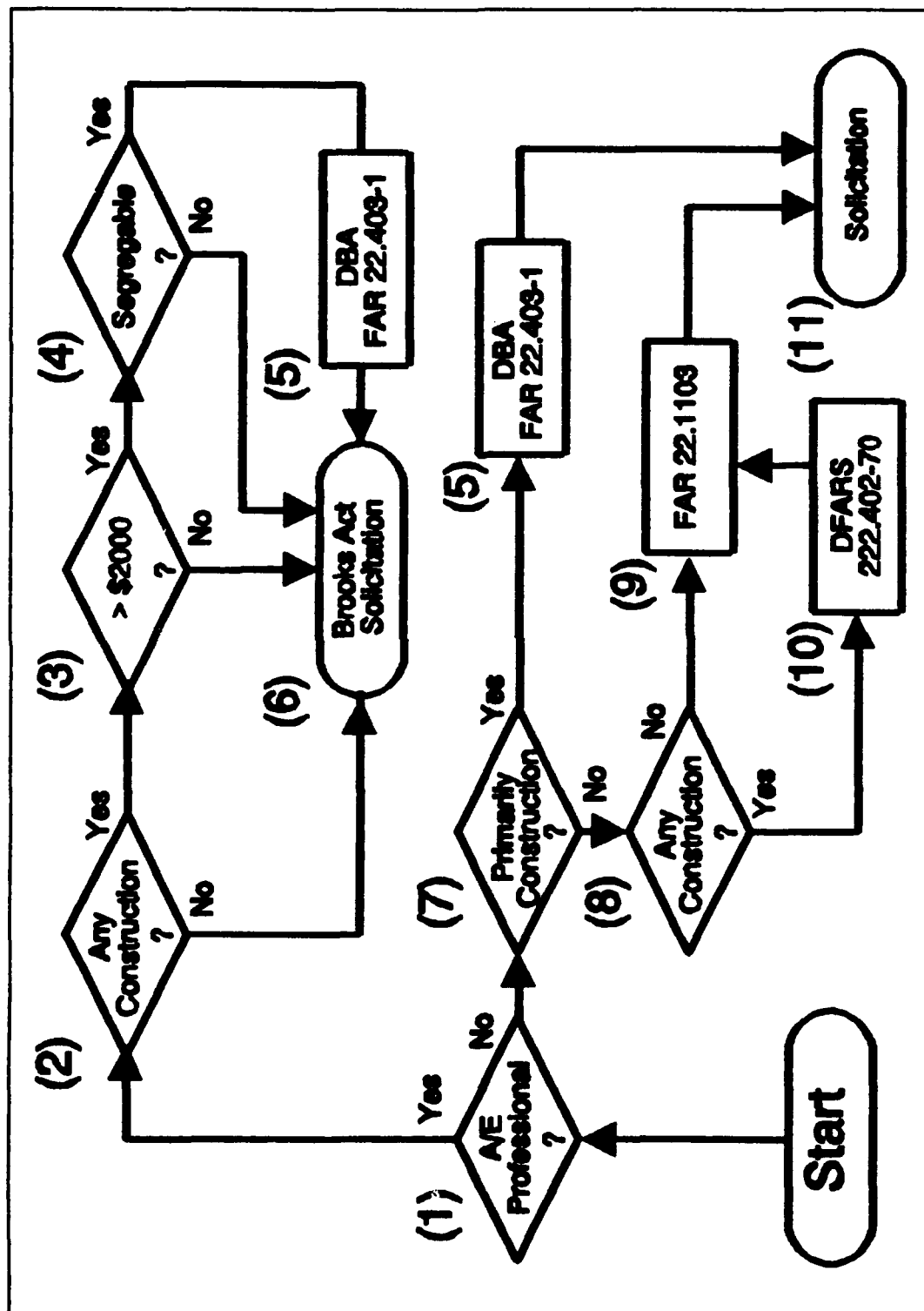


Figure 7. Contract Selection Model

Notes to Figure 7

1. This node represents the decision involving whether the contract tasks constitute the practice of professional Architect-Engineering (A-E) Services (including Title II design oversight). If so, the work must be procured under the Brooks Act procedures. FAR 36.102 gives the CO responsibility for making the determination of what constitutes "professional services." FAR Part 36 helps in making the determination by describing some types of A-E effort. Subpart 37.2 gives examples of "advisory and assistance services," which are not professional A-E services. Unfortunately, this list can leave questions. It may often be a good idea to ask for legal review early in acquisition planning.
- 2-4. Conducting the A-E studies for an IRP project often involves minor construction tasks such as drilling, trenching, construction of facilities for site testing, or construction of facilities for interim or emergency remedial action. Unless this construction is incidental to the A-E work, Davis Bacon Act wage grade determinations must be applied to that part of the work (FAR 22.402(b)).
5. Include the clause at FAR 52.222-6.
6. Solicit using the instructions in AFR 88-31.
7. Is the contract primarily for construction?
8. Does the contract involve segregable construction over \$2000 or tasks where it is unclear whether the character of the work should be judged as service or construction?
9. Include the clauses noted in FAR 22.1103 (mandatory for negotiated procurements expected to exceed \$250,000) to ensure adequate compensation of any professional employees who may be conducting advisory and assistance services, in addition to the Service Contract Act clauses stipulated by FAR 22.1006 to protect other employees under service contracts.
10. Include both the DBA and SCA clauses as instructed by DFARS 222.402-70 (1991 Edition).
11. Solicit in accordance with general procurement authority, pursuant to FAR Parts 13, 14, and 15 as noted by FAR 36.601(c).

Construction contracts are exempted by the FAR from using the Uniform Contract Format (UCF) because of the existence of industry-standard contract forms and specifications. The UCF is specified in FAR 14.201 and repeated here in Table II for convenience.

Section	Title
Part I -- The Schedule	
A	Solicitation/contract form
B	Supplies or services and prices
C	Description/specifications
D	Packaging and marking
E	Inspection and acceptance
F	Deliveries or performance
G	Contract administration data
H	Special contract requirements
Part II -- Contract Clauses	
I	Contract clauses
Part III -- List of Documents, Exhibits, and Other Attachments	
J	List of documents, exhibits, and other Attachments
Part IV -- Representations and Instructions	
K	Representations, certifications, and other statements of bidders
L	Instructions, conditions, and notices to bidders
M	Evaluation factors for award

Table II. "Uniform Contract Format," from FAR 14.201.

In exempting construction contracts, the FAR requires that all the above information be provided within whatever format is chosen. The format predominantly used in private sector construction contracting is the Project Manual, which was originated by the American Institute of Architects in 1964. The contents of a Project Manual are explained in detail in the Construction Specifications Institute (CSI) Manual of Practice and summarized here in Table III.

BIDDING REQUIREMENTS
Invitation
Instructions
Information
Bid Form
Bid Bond
CONTRACT FORMS
Agreement
Performance Bond
Certificates
CONTRACT CONDITIONS
General
Supplementary
SPECIFICATIONS
DRAWINGS
ADDENDA
CONTRACT MODIFICATIONS

Table III. Project Manual Contents

This format does meet the requirement to provide all the information in the UCF. However, the differences in terminology can be a bit confusing. The project manual's "General Conditions of the Contract" are the same as the "Part II - Contract Clauses (General Provisions)" of the UCF. The project manual's "Supplementary Conditions" are the same as the UCF Part I, Section H - Special Contract Requirements.

CSI also promulgates standards for specification format and content to help organize requirements flowdown and technical information. CSI begins with what it calls its MASTERFORMAT, which includes the following "divisions" of the project specifications:

- DIVISION 1 - GENERAL REQUIREMENTS
- 2 - SITEWORK
- 3 - CONCRETE
- 4 - MASONRY
- 5 - METALS
- 6 - WOOD AND PLASTICS
- 7 - THERMAL AND MOISTURE PROTECTION
- 8 - DOORS AND WINDOWS
- 9 - FINISHES
- 10 - SPECIALTIES
- 11 - EQUIPMENT
- 12 - FURNISHINGS
- 13 - SPECIAL CONSTRUCTION
- 14 - CONVEYING SYSTEMS
- 15 - MECHANICAL
- 16 - ELECTRICAL

Division 1, General Requirements, specifies administrative requirements and procedural requirements applicable to all subsequent sections in Divisions 2 through 16. Within each

division, the lower level specifications (Section Format) are organized as shown in Table IV.

PART 1 GENERAL	PART 2 PRODUCTS	PART 3 EXECUTION
Summary	Manufacturers	Examination
References	Materials	Preparation
Definitions	Manufactured units	Erection Installation
System description	Equipment	Application
Submittals	Components	Field quality work
Quality assurance	Accessories	Adjusting
Delivery, storage, and handling	Mixes	Cleaning
Project/site conditions	Fabrication	Demonstration
Sequencing and scheduling	Source quality control	Protection
Warranty		Schedules
Maintenance		

Table IV. CSI Three-Part Specification Format

The term "General" appears in several places in the CSI Construction Documents and Contract format and in the UCF, and so it can be easy to confuse the different meanings. CSI MASTERFORMAT specifications include Division 1, "GENERAL REQUIREMENTS" and each Section Format includes a "Part 1,

General." Great care is required to ensure that general requirements at the several levels are flowed down properly and do not conflict. This can be a particular problem during specification revisions. The CO may want to ask for cross-reference matrices as part of the PR to verify proper flowdown.

IX. Contract Administration

Modifications. A few words of caution are in order about modifications of IRP contracts. IRP projects can include a great deal of uncertainty about site conditions. In fact, the entire scope of the cleanup can be a function of uncertain site characteristics. Groundwater hydrology is a relatively young science with major areas of uncertainty, particularly in how to quantify the nature of heterogeneities in aquifers and soil profiles, how to quantify groundwater recharge rates, how to characterize chemical and biological reactions in subsurface media, and how to apply mathematical models of flow to varying geological conditions. Because of these uncertainties, the discovery of a difference from the anticipated hydrogeological conditions may almost be considered the rule rather than the exception, and such a change can easily be outside the scope of the agreement.

Likewise, there are administrative uncertainties affecting the scope of cleanup efforts. Perhaps the largest of these uncertainties is that other regulatory agencies are involved in the IRP decision making process. This can allow for significant requirements changes during the conduct of the project.

Quality Assurance. A strong quality assurance effort is always crucial to ensuring that your program is conducted in a cost-effective, timely, and technically efficient manner. In IRP contracting, an equally important consideration is that the decision processes leading to remedial actions are legally and administratively defensible. Because of this, the CO must also ensure that the QA program includes thorough review of data submittals both by the contractor, through contract requirements, and by the contract administrators through delegations.

Several of the IRP service agencies (see Chapter V) have found that short of using a design-build contractor, the best way to get effective QA in the RA phase is to include an option for Title II A-E Services in the RD contract. This way the designer provides oversight of the RA contractor, ensuring that the organization most familiar with the remedial design reviews the test results. This also helps speed the project toward closeout by ensuring that the RD contractor has no vested interest in prolonging the remedial action ('gold-plating' the design).

Service agencies have also had success with contracting out their QA efforts separately. HSD, for example, has had success using Mitre Corp, Civil Systems, of McLean, VA, to evaluate both contractor products and overall programs and to provide litigation support to the MAJCOMs.

X. Sources of Information

CSI. The CSI Manual of Practice describes commonly used standards for preparing and organizing construction contracts and specifications. It is available from:

Technical Documents Order Dept.
The Construction Specifications Institute
601 Madison Street
Alexandria, VA 22314-1791

Department of Commerce. Industry groups involved in environmental contracting such as Architects/Engineers/Consultants, Contractors, R&D/Testing Organizations, and Safety/Environment Associations and others can be found in the "Directory of National Trade Associations, Professional Societies, and Labor Unions of the Construction and Building Materials Industries," published each year by the U.S. Department of Commerce in the January/February issue of *Construction Review*, which is available from:

Superintendent of Documents
Government Printing Office
Washington, DC 20402

DoD. According to FAR 15.804-1, the Armed Services Procurement Manual for Contract Pricing (ASPM No. 1) was issued by the Department of Defense to guide pricing and negotiating personnel. It provides detailed discussions and examples applying pricing policies to pricing problems. Copies of this manual can be purchased from:

The Superintendent of Documents
 Attn: Mail List Section,
 U.S. Government Printing Office
 Washington, DC 20402

DFARS 210.008 (g)(2) et al notes "Contracting activities may obtain copies of the [DoD Index of Standards and Specifications] as well as all specifications and standards listed in the DODISS by sending DD Form 1425 to the [DoD Single Stock Point]" at:

Standardization Document Order Desk
 Building 4, Section D
 700 Robins Avenue
 Philadelphia, PA 19111-5094

Air Force. Air Force Regulations and Manuals affecting the IRP program include:

AFR 12-30	Air Force Freedom of Information Act Program
AFR 19-1	Pollution Abatement and Environmental Quality
AFR 19-2	Environmental Impact Analysis Process
AFR 19-3	Environmental Impact Analysis Process Overseas
AFR 19-4	Use and Control of Off-Road Vehicles
AFP 19-5	Environmental Quality Control Handbook
AFR 19-6	Air Pollution Control Systems for Boilers and Incinerators
AFR 19-7	Environmental Pollution Monitoring
AFR 19-8	Environmental Protection Committees and Environmental Reporting
AFR 19-9	Interagency and Intergovernmental Coordination of Land, Facility and Environmental Plans, Programs and Projects
AFM 19-10	Planning in the Noise Environment
AFR 19-11	Hazardous Waste Management and Minimization
AFR 19-14	Management of Recoverable and Unusable Liquid Petroleum Products
AFR 19-16	Environmental Compliance Assessment and Management Program
AFR 70-1	Dos and Don'ts of Air Force - Industry Relations
AFRP 70-1	Contracting and Manufacturing Newsletter

AFP 70-1-5 DoD/NASA Incentive Contracting Guide
 AFR 70-5 Should Cost
 AFP 70-6 Guide for Air Force Base Level Pricing
 AFR 70-8 Base Contracting Functions
 AFR 70-9 Base Level Service Contract Administration
 AFR 70-14 Business Strategy Panels
 AFR 70-15 Formal Source Selection for Major
 Acquisitions
 AFR 70-18 Local Purchase Program
 AFP 70-21 Guide for Monitoring Contractors' Indirect
 Cost
 AFP 70-22 Administration of Progress Payments
 AFR 70-30 Streamlined Source Selection Procedure
 AFM 70-333 Base Contracting Automated Systems (BCAS),
 End Users Manual ("On-line" Document)
 AFR 85-10 Operation and Maintenance of Real Property
 AFR 85- CE-General
 AFR 86- CE-Planning & Programming
 AFR 87- Real Property Management
 AFR 88- Facility Planning and Design
 AFR 89- Facility Construction
 AFR 91- Real Property Operation and Maintenance
 AFR 126- Natural Resources
 AFR 172- Budget
 AFR 173- Cost Analysis
 AFR 177- Accounting and Finance
 AFR 178- Cost and Management Analysis
 AFR 190- Public Affairs
 AFR 800- Acquisition Program Management

CEEV. HQ USAF, Directorate of Engineering and
 Services, Environmental Quality Division produces the Air
 Force Installation Restoration Program Management Guidance
 ("the White Book"), the Installation Restoration Program
 Remedial Project Manager's Handbook and the Installation
 Restoration Program Contract Strategy Guide. Write to:

HQ USAF/CEEV
 Building 516
 Bolling AFB DC 20332

or copies can be bought from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

AFISC. The Air Force Inspection and Safety Center produced the *Report on Functional Management Inspection of Civil Engineering-Contracting Interface at Base Level*. Ask for Report PN 87-609. Write to:

AFISC
Norton AFB, CA 92409

AFLMC. The Air Force Logistics Management Center publishes guides for operational contracting such as the *Base Contracting Officer Handbook*, *Construction Branch Chief Guide*, *Base Level Award Fee Guide*, and their *Construction Contract Administrator's Technical Handbook*. Copies of these guides are available by writing to the Directorate of Contracting at:

AFLMC/LGC
Gunter AFB, AL 36114-6693

USACE. The Army Corps of Engineers Water Resources Support Center produced a report entitled *Hazardous and Toxic Waste (HTW) Contracting Problems — A Study of the Contracting Problems Related to Surety Bonding in the HTW Cleanup Program*. Ask for a copy of IWR Report 90-R-1:

U.S. Army Corps of Engineers
Water Resources Support Center
Institute for Water Resources
Casey Building
Fort Belvoir, VA 22060-5586

NEESA. The Naval Energy and Environmental Support Activity has prepared a comprehensive guide to cleanup methods entitled *Remedial Measures Technology Guide*. This is NEESA Report 20.2-051A. Copies can be obtained by writing to:

NEESA, Code 112E
Port Hueneme, CA 93043

or calling NEESA at (805) 982-4856 or DSN 551-4856.

DSMC. The Defense Systems Management College Acquisition Strategy Guide can be purchased from:

The Superintendent of Documents
Attn: Mail List Section,
U.S. Government Printing Office
Washington, DC 20402

DOE. Information about HAZWRAP support under the Department of Energy Work for Others Program can be obtained from:

WFO Coordinator
Mail Stop 7606
Hazardous Waste Remedial Actions Program
Martin Marietta Energy Systems, Inc.
P.O. Box 2003
Oak Ridge, TN 37831-7606

or by calling (615) 435-3250.

DOT/FEMA. The Department of Transportation, Federal Emergency Management Agency operates the *Hazardous Materials Information Exchange*, a computer bulletin board system which provides information on federal agencies who provide hazardous materials training, industry associations, producers of instructional materials, toll-free phone

numbers for technical assistance and on-line databases,
lists of key contacts, legal information, and other topics.

Ask for DOT/FEMA Publication FEMA-193.

The Superintendent of Documents
Attn: Mail List Section
U.S. Government Printing Office
Washington, DC 20402

or dial the HMIX through your computer: 1-800-874-2884.

EPA. The US Environmental Protection Agency Office of
Emergency and Remedial Response produces the Catalog of
Superfund Program Publications, which is document number
EPA/540/8-89/008. Copies can be obtained at no charge from:

Center for Environmental Research Information
ORD Publications
26 West Martin Luther King Drive
Cincinnati, OH 45268

or by calling (513) 569-7562 or FTS 8-684-7582. The EPA
Office of Solid Waste and Emergency Response (OSWER) also
produces a training catalog. This can be reached through a
computer bulletin board system at 1-800-874-2884 or on a
voice line at 1-800-752-6357 (1-800-367-9592 in Illinois).

GAO. The U. S. General Accounting Office has produced a
report entitled Superfund Contracts: EPA Needs to Control
Contractor Costs. This is Report GAO/RCED-88-182.

The Superintendent of Documents
Attn: Mail List Section,
U.S. Government Printing Office
Washington, DC 20402

HSD. The U. S. Air Force Human Systems Division (AFSC) is one of the four major service centers for IRP work. The Air Base Support Directorate (HSD/YAQ) can be reached at (512) 536-9001 or by writing to:

HSD/YAQ
Brooks AFB, TX 78235

NCMA. The National Contract Management Association is your professional organization for contract management. The NCMA publishes a quarterly journal, the *National Contract Management Journal* and a more informal monthly entitled *Contract Management Magazine*. In addition, the NCMA has done analyses of contract management literature, including their *APPL Bibliography of Procurement Education Materials*. This bibliography is a comprehensive reference to contract management materials, including books, pamphlets, articles, and audiovisual aids pertaining to various contract management topics. They can be reached at:

National Contract Management Association
1912 Woodford Road
Vienna, VA 22182

NAVFAC. The U. S. Navy Facilities Engineering Command is one of the four major service centers for IRP work. They can be reached by writing to:

Navy Facilities Engineering Command
200 Stovall Street
Alexandria, VA 22332-2300

NIBS. The National Institute of Building Sciences has created a Compact Disc Read Only Memory (CD-ROM) system which automates construction and related documents. This IBM PC compatible system with automated searching and processing functions provides on-line access to the FAR (and supplements), Air Force Regulations and Manuals, EPA Regulations, Guide Specifications from USACE, NAVFAC, and others, and many other documents from Federal Agencies, including cost estimating tools and listings of contacts in the building industries. For more information, call NIBS at (202) 289-7800 or write to:

National Institute of Building Sciences
1201 L St. N.W., Suite 400
Washington, DC 20005

NRT. The National Response Team of the National Oil and Hazardous Substances Contingency Plan, commonly called just the National Response Team, is an interagency team formed to coordinate federal planning, preparedness, and response actions related to oil discharges and hazardous substance releases. The NRT prepares the National Contingency Plan, which prioritizes remediation of the nation's hazardous wastes by placing those with the most potential for harm to human health on a National Priorities List (NPL). Cleanups on NPL sites have special administrative requirements. The NRT also publishes an Annual Report. Their address is:

National Response Team
G-WER/12
2100 Second Street SW
Washington, DC 20593

USACE. The U. S. Army Corps of Engineers is one of the four major service centers for IRP work. Their Missouri River Division is the central point of contact for Tactical Air Command and most other MAJCOMs. They can be reached at (402) 221-7497 or by writing to:

U.S. Army Corps of Engineers
Missouri River Division
HTW Division
P.O. Box 103, Downtown Station
Omaha, NE 68101-0103

USATHAMA. The U. S. Army Toxic and Hazardous Materials Agency has published a report entitled *Installation Restoration and Hazardous Waste Control Technologies* (Report No. AMXTH-TE-CR-88010) which describes various technologies and gives estimated costs. They can be reached at (301) 671-2054 or by writing to:

Cdr., USATHAMA
Attn: AMXTH-TE-D
Aberdeen Proving Ground, MD 21010-5401

Glossary of Acronyms

A-E:	Architecture-Engineering
AEA:	The Atomic Energy Act (42 USC §§2201 et seq.)
AFB:	Air Force Base
AFCESA:	Air Force Civil Engineering Support Agency
AFFARS:	Air Force Federal Acquisition Regulation Supplement
AFIT:	Air Force Institute of Technology
AFM:	Air Force Manual
AFP:	Air Force Pamphlet
AFR:	Air Force Regulation
AFRP:	Air Force Recurring Pamphlet
AFLMC:	Air Force Logistics Management Center
AFSC:	Air Force Systems Command
APPL:	Active Procurement Program Library
AR:	Army Regulation
ASPM:	Armed Services Pricing Manual
ASPR:	Armed Services Procurement Regulations
AU:	Air University
BBS:	Bulletin Board System
BCAS:	Base Contracting Automated System
BCE:	Base Civil Engineer
BCO:	Base Contracting Officer
BOA:	Basic Ordering Agreement
CAA:	The Clean Air Act (42 USC §§7401 et seq.).

CAS: Contract Administration Services
or Cost Accounting Standards

CBD: Commerce Business Daily

CICA: Competition in Contracting Act

CEC: Civil Engineering Corps (US Navy)

CERCLA: The Comprehensive Environmental Response,
Compensation, and Liability Act (42 USC §§9601
et seq.). (The "Superfund Act").

CFR: Code of Federal Regulations

_CO: Contracting Officer

COE: Corps of Engineers (US Army)

COTR: Contracting Officer's Technical Representative

CPAF: Cost Plus Award Fee

CPIF: Cost Plus Incentive Fee

CPFF: Cost Plus Fixed Fee

CSI: Construction Specifications Institute

CWA: The Clean Water Act (33 USC §§1251 et seq.)

DBA: The Davis-Bacon Act (40 USC §§276a et seq.)

D&F: Determination & Findings

DCAA: Defense Contract Audit Agency

DERA: The Defense Environmental Restoration Account

DERP: The Defense Environmental Restoration Program

DFARS: DoD Federal Acquisition Regulation Supplement

DLA: Defense Logistics Agency

DLSIE: Defense Logistics Information Exchange

DMR: Defense Management Review

DoD: Department of Defense

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DODD: DoD Directive

DODISS: DoD Index of Specifications and Standards

DOE: Department of Energy

DOL: Department of Labor

DSMC: Defense Systems Management College

DTIC: Defense Technical Information Center

EA: The Economy Act of 1932 (31 USC §§1535)

EM: Environmental Management Office

EMD: Engineering and Manufacturing Development

EPA: Environmental Protection Agency
or Economic Price Adjustment

EPC: Environmental Protection Committee

F&OC: Full and Open Competition

FAR: Federal Acquisition Regulation

FEMA: Federal Emergency Management Agency

FEPCA: The Federal Environmental Pesticide Control Act of
1972 (7 USC §§136 et seq.)

FIFRA: The Federal Insecticide, Fungicide, and
Rodenticide Act (7 USC §§136 et seq.)

FFP: Firm-Fixed-Price

FFP,LOE: Firm-Fixed-Price, Level-of-Effort

FMI: Functional Management Inspection

FPAF: Fixed-Price Award Fee

FP-EPA: Fixed-Price with Economic Price Adjustment

FPI: Fixed-Price-Incentive

FPIF: Fixed-Price-Incentive (Firm Target)

FPIS: Fixed-Price-Incentive (Successive Targets)

FPR: Fixed-price with prospective price redetermination

FS: Feasibility Study

FSD: Full Scale Development (now EMD)

FWPCA: The Federal Water Pollution Control Act
(33 USC §§1251 et seq.)

FY: Fiscal Year

GFE: Government-Furnished Equipment

GFP: Government-Furnished Property

HCA: Head of Contracting Agency

HMIX: Hazardous Materials Information Exchange

HSD: Air Force Human Systems Division

HTW: Hazardous and/or toxic waste

IDIQ: Indefinite Delivery Indefinite Quantity

IFB: Invitation for Bids

IG: Inspector General

IRA: Interim Remedial Action

IRP: Installation Restoration Program

JAG: Judge Advocate General

J&A: Justification and Approval

LH: Labor-Hour

MCL: Maximum Contaminant Level

MILCON: The Military Construction Program

MIPR: Military Interdepartmental Purchase Request

MOA: Memorandum of Agreement

MOU: Memorandum of Understanding

MRD: Missouri River Division (USACE)

MPRSA: The Marine Protection, Research, and Sanctuaries Act of 1972 (16 USC §§1431 et seq. and 33 USC §§1401 et seq.)

NAVFAC: Naval Facilities Engineering Command

NCMA: The National Contract Management Association

NCA: The Noise Control Act (42 USC §§4901 et seq.)

NCP: The National Contingency Plan (40 CFR Part 300)

NEESA: Navy Energy and Environmental Support Activity

NEPA: The National Environmental Policy Act (42 USC §4331)

NFA: No Further Action

OPR: Office of Primary Responsibility

OSC: On-Site Coordinator

OSWER: Office of Solid Waste and Emergency Response (USEPA)

PA: Public Affairs

PCE: Professional Continuing Education

POL: Petroleum, Oil, or Lubricants

PR: Purchase request

PRP: Potentially Responsible Party

QA: Quality Assurance

QASP: Quality Assurance Surveillance Plan

RA: Remedial Action

RCRA: The Resource Conservation and Recovery Act (42 USC §§6901 et seq.)

RD: Remedial Design

ROD: Record of Decision

RFP: Request for Proposals

RFQ: Request for Quotations

RFTP: Request for Technical Proposals

RI: Remedial Investigation

RPM: Remedial Project Manager

SARA: The Superfund Amendment and Reauthorization Act
(42 USC §§9601 et seq.)

SBA: Small Business Administration

SCA: The Service Contract Act (41 USC §§351 et seq.)

SDWA: The National Safe Drinking Water Act
(42 USC §§300 et seq.)

SECAF: Secretary of the Air Force

SI: Site Investigation

SMCRA: The Surface Mining Control and Reclamation Act
(30 USC §§1201 et seq.)

SOW: Statement of Work

SPC: Statistical Process Control

SPO: System Program Office

SQC: Statistical Quality Control

SSP: Source Selection Plan

T&M: Time and Materials

TRCO: Technical Representative of the Contracting
Officer

TSCA: The Toxic Substances Control Act
(15 USC §§2601 et seq.)

UCF: Uniform Contract Format

USACE: US Army Corps of Engineers

USATHAMA: US Army Toxic and Hazardous Materials Agency

WPCC: Wright-Patterson Contracting Center

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Vita

Captain Grant S. Bowers was born in Medford, Oregon on 2 June 1956. He graduated from Medford Senior High School in 1974. In 1983 he graduated from the University of Idaho where he received the degree of Bachelor of Science in Mining Engineering. He attended Officer Training School at Lackland Air Force Base, Texas in 1985 and received a commission in the U.S. Air Force. Upon commissioning, he was assigned to the Air Force Plant Representative Office at TRW Space & Defense Sector in Redondo Beach, California, where he served as a contract administration engineer and program manager for the procurement of DoD and NASA communications satellites and ground control systems, software, avionics, and custom microelectronics. He also acted as Chief, Cost/Schedule Control Systems Surveillance Branch. In 1989 Captain Bowers was assigned to the Joint Milstar/AFSATCOM Program Office, Space Systems Division (AFSC), where he served as Chief, Product Assurance Branch. He entered the School of Systems and Logistics, Air Force Institute of Technology (AU), in May 1990. Captain Bowers is married to the former Patricia Hogstrom of Medford, Oregon, and has two daughters, Sara and Amy.

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**A CONTRACT MANAGEMENT GUIDE FOR AIR FORCE
ENVIRONMENTAL RESTORATION**

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8. SECURITY CLASSIFICATION

Approved for public release; distribution unlimited

This study was conducted to examine the extent to which written guidance was available to Air Force contracting officers involved in environmental restoration projects. The study examines literature from sources inside and outside the Air Force, classifies it by source, and extracts guidance from the subject matter. The study indicates that written guidance exists, but is fragmented. As a result, contracting officers lack concise guidance on the special considerations in contracting for environmental restoration. Guidance from the literature is summarized and presented in a stand-alone guide appended to the report. The guide is targeted toward new and mid-level contracting officers and recommends specific contract management techniques for environmental restoration. In addition, the thesis recommends further study and suggests changes to the contracting guidance in the Federal Acquisition Regulation.

14. SUBJECT TERMS

**Contracting, Procurement, Contract Management, Operational
Contracting, Contract Administration, Environmental Restoration**

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